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AND

COAL

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A PROSPEROUS GOLD AND SILVER MINE.

The accounts, balance sheets, and reports, presented by the directors of the Montana Company, Limited, for the half year ending with June, must have proved very entertaining and comfortable reading to their shareholders. Especially must they have been relished by such of them (if any yet remain) as went in at par, since the net profits for the six months amounted to no less than £147,293, of which, after paying the last remaining debts on capital account, about two thirds were available for dividends. The total payments to shareholders from the first of September, 1884, are thus brought up to £297,807 or nearly 50 per cent of the nominal capital of the company, and the really remarkable manner in which the dividends have advanced from 15 per cent in 1885 to 22½ per cent in 1886 and to 30 per cent at the present time, is an eloquent commentary, no less upon the vigor and success with which the work at the mine has been pushed forward, than upon the apparent regularity with which the ore itself has improved in grade, as the shafts have gained in depth. Under the happy circumstances of this long continuance of success, it is but natural that Mr. R. T. BAYLIS, the manager, should have received enthusiastic thanks and praises from his admiring constituents, nor do we hesitate to join in the universal chorus of congratulations. As at once illustrative of the disaster that may be brought upon a fine property by the recklessness and folly of its stewards, and of the readiness with which that disaster may be surmounted and transformed by honest and able management into the most brilliant prosperity, the Montana mine offers an example that will doubtless be frequently cited in the future history of American mining, and that should teach a much needed and too long neglected lesson to our English cousins. With characteristic egotism and insular self complacency they have always neglected our frequent and friendly warnings, and so have continued with a monotonous regularity to be victimized by the specious and lying adventurers who have foisted upon them the hollow schemes that could find no honest backers in this country. It is therefore quite a relief to see this one divergence from the well trodden path of failure, although so well established is their reputation for mischance, that even in this case, while certain wiseacres affirm the success of the Drum Lummon to be entirely a freak of fortune, unexpected and unsuspected by all who were primarily concerned in its sale, others predict for it only a very brief career as a "bonanza!" Our own reports contradict this gloomy foreboding, and speak of immense "reserves," sufficient to maintain the output and profits for several years, but the shares are being quoted and sold at a price which confers a value of $12,000,000 upon the property, and it is a question whether this is justified by the evidence furnished in the report.

PROGRESS OF THE EL CALLAO.

This famous gold mine, for years past the richest in the world, has now got "out of *bonanza*," as all rich mines do, sooner or later. The report of the superintendent, dated January 20th, 1887, declared that at the end of the year 1886 the pay-shoot was "much contracted in its width," and poor besides, and the directors frankly confessed, in their last annual report, that the lode was poorer than at any previous period of its history. As it still exhibited continuity, they hoped its poverty was but accidental and temporary.

We are indebted to Mr. HAMILTON SMITH, the consulting engineer of the company, for a copy of a later report from Mr. H. C. PERKINS, the superintendent, which brings the history down to the end of June last. It shows that explorations have been pushed with vigor and at large expense, but thus far without success. The only encouraging feature of the situation appears to be, that the vein extends undisturbed in all directions, though the pay-shoot does not.

This change in the prospects of El Callao was somewhat sudden. In 1886, the company produced 181,040 ounces of gold, worth 17,285,147 francs, and paid dividends amounting to 11,012,400 francs, or nearly 64 per cent of the gross product—a great advance over preceding years. In 1884, for instance, the product was nearly the same as in 1886, while the dividends were 1,400,000 francs less. And if we go back to the years before 1882, we find that only about one fourth of the product was profit. These figures reflect much credit upon Mr. SMITH and Mr. PERKINS, to whose introduction of American methods and machinery the great gain in economy has been due.

Until August, 1886, there seemed to be no reason to fear the exhaustion of the great bonanza of El Callao, which had produced a million ounces of gold. But in that month, the signs of approaching exhaustion began to appear; and there has been no turn of fortune since.

The history of Mr. HAMILTON SMITH'S connection with El Callao is a curious one. He was originally sent to examine the property with reference to a proposed purchase of an interest by the Rothschilds. His report was not favorable enough to induce them to pay the price demanded, and the sale fell through. If we remember correctly, Mr. SMITH found that the *bonanza* would not hold out, and even saw disquieting signs of a pinch in the bottom of the mine. After failing to raise in Europe the capital they desired, the South American owners resolved to go ahead with their own means, and, with rare good sense, engaged Mr. HAMILTON SMITH to make and direct their plans. Apparently, the thoroughness of his examination and the severity of his judgment impressed them favorably, and the result confirmed their impression. Mr. SMITH and his appointee, Mr. PERKINS, rapidly reformed the administration and reconstructed the plant; fortune favored their American energy and skill; the bonanza became richer than ever, and dividends grew in proportion faster than gross earnings. The stock of the company was extensively sold in London, at better rates, we believe, than the Rothschilds had refused to pay. In short, El Callao was a wonderful exhibition of good management, reinforced by good luck.

The luck has turned. The calamity which Mr. SMITH feared, years ago, and which was then averted by kindly fate, has now come to pass. But

the skill and pluck remain, and we hope they will be rewarded, as they deserve, with new discoveries of rich material.

Of course complete exhaustion has not arrived so soon. The product of the mine for the first six months of 1887 was 37,200 ounces, valued at 3,653,263 francs. The amount of ore worked was 32,698 tons, which yielded an average of 111·7 francs, or a little over an ounce of gold per ton. As the average in 1886 was 2·45 ounces, the falling-off in quality is plain. And unless new sources of supply shall be opened, there will be a still greater diminution in quantity, for the company cannot afford to work ore that yields less than half an ounce per ton, and the reserves above that grade are limited.

After all, El Callao is entitled to a little variation from the monotony of dividends. It has paid them continuously since 1875, and they amount now to over $9,000,000, to say nothing of the millions which were wasted in tailings in the early days, and which may be described as dividends paid to the universe ge nerally, but not to the stockholders.

THE STRIKE IN THE LEHIGH COAL-FIELDS.

Unquestionably the ideal basis for wages is one in which the wage earner will share in the profits which may come from the product of his work; but there are so many practical difficulties in arriving at a simple and just way of dividing these profits, or losses, that but little progress has yet been made in introducing direct profit-sharing arrangements between employers and employed.

Perhaps the simplest method which has yet successfully passed the ordeal of extensive practical application is that known as the "sliding scale," in which the wages of the employés are based upon the selling prices of the products of their labor, and go up or down, within certain specified limits, with the market prices of these. This system was introduced in the Schuylkill region in 1869, and it has been the means since that time of preventing many disastrous strikes. So satisfactorily did the system work that it extended to other districts, and the story of its introduction and operation forms one of the most instructive chapters in the history of the coal trade and in the evolution of the wages question. We shall commence this story in our next issue.

The present strike in the Lehigh and part of the Schuylkill districts is not against or for a basis, but appears to have its origin in the efforts of the Knights of Labor organization to control the arrangements between employers and workmen in the coal regions. The unfortunate recent surrender of the Philadelphia & Reading Company to the successive demands of this labor organization for the discharge of one officer after another naturally led to a demand for an advance in the basis scale of wages, and the requirements of the stock market or some other cause outside of the permanent interests of the trade induced Mr. CORBIN to grant this also. How soon the next "demand" will be made upon this company, and just what its extent and nature will be, it is, of course, impossible to foresee; but all past experience teaches that the weak-kneed employer will be followed up by successive demands, each more exacting than the previous one, until at last he either has to go out of business altogether, or to make a stand, which his past surrenders make all the more difficult, protracted, and expensive.

It is reported that the Knights of Labor, or the workmen of the Philadelphia & Reading, have voted the 8 per cent advance they have recently obtained from the company to the support of the strike in the Lehigh region, so that the plan is developed that the different districts are to be attacked in detail and the concessions of one are to be used to aid in defeating the others.

The question on which the operators stand is not, as we understand it, one of a simple advance in wages, but it is the interference of an outside organization in the arrangements between the employers and their workmen. Every one knows that such firms as COXE BROTHERS, under Mr. ECKLEY B. COXE, and the Pennsylvania Railroad Company's mines, under Mr. IRVING A. STEARNS, and others now affected by this strike, are always ready to consider any grievance that their employés may lay before them, and, as honorable and just men, have always been prompt in righting wrongs; but they insist on settling their business relations directly with their own men, and resent the dictation of an outside organization which is controlled by men who neither understand nor appreciate the questions at issue.

Since it is evident that a stand must sooner or later be taken against the encroachments and dictation of these foreign organizations in the management of their business, it is natural that the Lehigh operators should look upon the present crisis as more serious than its extent would indicate, and that they appear to have fully decided that no concession will be made, and that the battle will be fought out to "the bitter end." Under the present sliding scale the miner participates in the advance in the market price of coal, and though the cost of living has declined, and the cost of mining has, in items outside of labor, generally increased since the scale was adopted, no corresponding reduction has been asked for by the emplo/ers. The miners are certainly better off than they were when the scale was adopted, as we shall show in our history of the sliding scale. It is to be hoped that the fuller light we shall throw upon the question will bring about a renewal of those amicable relations which were inaugurated after a long strike by the adoption of the present sliding scale of wages.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

Trough Lixiviation.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I beg to be allowed to make a few remarks on the article entitled "Trough Lixiviation," recently published in your journal.

The manner in which it is advocated is somewhat surprising, for as yet I do not know of any place where it has been employed with success. On the only occasions I have heard of its adoption on a large scale by Mr. O. Hoffmann the results obtained were not satisfactory. I refer to attempts made on the ore at Tedras and Cusihuiriachic, Mexico. In the latter place I notice he remarks that his results by the "Trough System" were *excellent*. Having the results of the mill run in my possession, I beg to deny this. If Mr. Hoffmann desires it, I will publish them. The great drawback to the process is the difficulty in separating the ore from the solution, together with the quantity of both solution and water required, making the system cumbersome and expensive. If desired, I will give a more minute description of experiments on this method, but at present will not trespass further on your valuable space. Yours truly,

HARRY CHANEY, A.R.S.M., F.S.C.I. (Manchester),
CUSIHUIRIACHIC, Sept. 22. A.I.C. (London).

"Raw Basic Slag."

EDITOR OF THE ENGINEERING AND MINING JOURNAL:

SIR: Dr. Wyatt's article on "Raw Basic Slag," which appeared in your issue of the 2d and 9th July last, has been brought to my knowledge. Now seeing, from his recent letter (September 3d), that he appears to have been rather harshly treated by some of his opponents, I beg to refer you to my letter to the editor of *Engineering* (London), which appeared here on the 3d of June last, and which shows that our conclusions on the deportment of "raw basic slag" in the soil are identical from a scientific standpoint, notwithstanding the distance separating our field of investigation. The statement of such an extraordinary loss as £5 for each ton used of this stuff, under pretence of economy, may suggest the impression of "exaggeration" or "madness." The question is, however, to whom are such expressions to be properly applied?

A fair reply to this question I hope will soon be at your disposal, resulting from genuine and practical experiments (not quite finished) on fields, carried out in this country (England) under the supervision of independent and disinterested authorities. Yours faithfully,

ALEXANDER BOBROWNICKI, C.E.
746, OLD KENT ROAD, London, S. E., Sept. 24, 1887.

[The letter referred to by our correspondent as having appeared in London *Engineering* is a most able exposition of the effects likely to follow the use of the slag in ordinary soils. His views entirely agree with those of Dr. Francis Wyatt, and we shall certainly watch the development of the experiments now being carried on by both gentlemen with much interest.—ED. ENGINEERING AND MINING JOURNAL.]

The Burmese Coal Deposits.—The existence of coal measures in Upper Burmah has long been known, and specimens have from time to time been examined by Calcutta experts and tried on steamers. The ascertained facts exceed the most sanguine expectations. Four extensive coal-fields have been more or less thoroughly examined. The first is situated seventy miles above Mandalay on the left bank of the Irrawaddy and within a few miles of the river. A consignment of this coal was tried on the ex-king's steamers. The second lies 150 miles up the Chindwin River, within three miles of the main channel. Coal from this field has been burnt during the past year, and, indeed, for some time previously, on the Chindwin steamers, and is pronounced to be excellent fuel. The seams are thick, and the dip of the strata is moderate. There are also the Panlaung coal-field, with its most accessible known outcrop near Hlaingdet, and the coal measures and outcrops on the Shan plateau. With regard to the last two coal-fields, little is known, but the highest authority expresses a hope that, when the geological surveyor (who has been at work since the beginning of the year) completes his examination of the whole, the private capitalist will not be slow to follow in his wake.

Influence of Coal-Dust in Mine Explosions.—We take the following from the *Newcastle Weekly Chronicle*: "It has been the custom during a great number of years—at least forty years—to water the main roads in dusty mines in Durham to keep the dust under, but this was done in a very rude and imperfect manner. Tubs full of water were attached to the trains of tubs, a perforated box was placed under the tub, and the water run into this box. The result was that while the centre of the road was well watered the sides and roof remained untouched. The apparatus invented by Mr. Robson and Mr. Archer is a great advance on this primitive method. The water is sent along the roadway in tubs, to which machinery, worked from the axles of the wheels, is attached, and by means of this mechanism the water is thrown out in the form of spray and spread equally over the whole surface of the drift—bottom, sides and roof. The object is to prevent the formation of dust in any part of the drift, and this object has to a considerable extent been attained. Another scheme for entirely preventing the deposit of coal-dust in the galleries of coal mines, which I have heard of, aims at saturating the air currents entering the mine with moisture up to a certain point. That this can be effected does not appear to be at all doubtful. The idea is large and comprehensive, and such a system if carried out would strike at the very root of the evil."

THE DEVELOPMENT OF THE AMERICAN CHEMICAL INDUSTRY.*

By Dr. Francis Wyatt.

(*Continued from Page 240.*)

COSTS OF PRODUCTION.

From what has preceded it is perfectly clear that the actual cost of sulphuric acid entirely depends upon three chief conditions:

First. The price of sulphur.

Second. The resources, adaptabilty and excellence of the working plant.

Third. The chemical, mechanical, and generally, industrial skill, of the working management.

It would, therefore, be obviously unfair to make any allowance for shortcomings which have no right to exist, and as the real object in view is to show all those who, from ignorance or obstinacy still cling to old methods, what is being done by means of the new—it will be wise, in going into figures, to assume perfection in every detail.

A correct basis for calculation is furnished by what is commonly known as chamber acid; that is to say, the crude product daily formed in the chambers and not subjected to any kind of concentration. With proper care it will always have a specific gravity of at least 1·530 and be equal to 50 degrees Beaumé or 106 degrees Twaddle.

For such purposes as the decomposition of natural phosphates, the manufacture of alkali, caustic soda, bleaching powder, nitric and hydrochloric acids, stearic acid, and many other articles, no greater average strength than this is required, and probably about one half of all that is now made goes into these channels.

Where it is customary, as in many European works, to run all that comes from the chambers through Glover's tower, the concentrated liquid is easily reduced to 50 degrees B. by the addition of water.

The composition of pure H_2SO_4 is made up of 81·63 parts of sulphuric anhydride and 18·37 parts of water.

For every 100 pounds by weight it contains:

	Pounds.
Hydrogen	2·041
Sulphur	32·653
Oxygen	66·306
	100·00

Hence the quantity of acid produced by 100 pounds of sulphur should be:

	Pounds.
Sulphur	100 00
Hydrogen	6 20
Oxygen	199 80
Total H_2SO_4 =	306 00

In other words, one pound of sulphur, when properly burned, theoretically yields 3·06 pounds of the monohydrate, with a specific gravity of 1·842 at 15 degrees C. and 66 degrees, according to Beaumé's hydrometer. In practice, a regular average yield of about 2·95 pounds of 66 degrees Beaumé, or even 4·50 pounds of 50 degrees Beaumé, is considered an excellent result, and, while the statements of manufacturers who claim to do better than this must be received with caution, it may nevertheless be laid down as an axiom, that *from every pound of sulphur really burned, whether it be in the form of brimstone or of pyrites, the same amount of sulphurous acid gas, and consequently of sulphuric acid, will, under all equal conditions, be produced.*

A reference to the analytical table with which we set out will show that the average proportion of sulphur contained in the pyrites mined, and imported into, or used, in this country, may be fairly taken as 46 per cent.

A long and very varied experience has demonstrated that of this amount at least six per cent is commonly unavailable, and may be regarded as loss.

The prices of raw material given in the following table are intended to cover all costs of delivery at works in either the New York or Philadelphia districts, and are designedly fixed at the lowest limits at which contracts have recently been offered for pyrites and brimstone.

In the pyrites estimate, considerable additions have been made to the items of niter and labor, and it has been considered wise in both cases to write off the whole value represented by the works in ten years, experience of this system in practice having proved highly satisfactory.

Despite sundry drawbacks the balance of advantage is unequivocally shown to be on the side of the pyrites, even when utilized at centers so far distant from the sources of production as to entail the heavy freight already referred to.

TABLE OF COMPARISON SHOWING THE ACTUAL COST OF PRODUCING 1 TON OF 50° BEAUME SULPHURIC ACID FROM BRIMSTONE AND PYRITES IN THE DISTRICT OF NEW YORK OR PHILADELPHIA.

Brimstone (short tons).	
1 Ton of brimstone (98 per cent S.) thirds, at $19	$19.00
50 Lbs. of nitrate of soda, at 2½ cents per lb	1.25
5 Cwt. coals at, say, $4 per ton	1 00
Workmen's wages	2.25
Superintendence and management	2.00
General jobbing repairs	.50
Interest on capital of $75,000†	4.80
Total	$30.60
Product equals 4½ tons of 50° B.—Cost per ton	$6.80
Pyrites (short tons).	
2½ Tons of iron pyrites at 46 per cent sulphur, at 10 cents per unit—per ton	$11.50
60 Lbs. nitrate of soda, at 2½ cents per lb.	1.50
5 Cwt. of coals at, say, $4 per ton	1.00
Workmen's wages	3.00
Superintendence and management	2.00
General jobbing repairs	.60
Interest on capital of $100,000†	6.15
Total	$25.75
Product equals 4½ tons of 50° B.—Cost per ton	$5.50

To offer the same advantages as pyrites on the above basis, therefore—all other conditions being equal—brimstone must be sold at $14 per ton.

The feasibility of manufacturing the acid in the vicinity of the mines has been already alluded to. Its practicability must be established by clearly demonstrating the cost of carrying other raw materials, such as coal, phosphates, salt, etc., or even the 66 degrees B. acid itself, to be less in the end than the freights now paid upon the pyrites ore.

This problem deserves to be inquired into by our capitalists, since its favorable solution would still more reduce costs, as follows:

COST OF ACID PRODUCTION AT THE MINES.

2½ tons of iron pyrites containing 46 per cent sulphur at a maximum of 4c. per unit delivered	$4 60
Other charges, same as given in preceding table	14.25
Total cost of 4½ tons 50 degrees B. acid	$18.85
Cost per ton	$4.20

The same results would be obtained from brimstone at $7.25 per ton, or, in other words, the manufacturer at the mines would be working upon sulphur, which, on an exactly equivalent chemical basis of calculation, would cost him $11.75 less per ton than the price paid for brimstone by his New York competitors.

PURIFICATION.

Pyrites acid generally contains impurities which are not encountered in that made from brimstone. Thus, for example, arsenic acid, arsenious acid, antimonic oxide, selenium, thallium, lead, iron and aluminum have all been discovered in the various descriptions of ore, the most objectionable, of course, being the arsenical compounds.

There are many of the industries already named,—notably the purification of petroleum, the manufacture of fertilizers, sulphate of soda, and explosive compounds,—in which arsenic has no injurious influence and may be disregarded. But opposed to these are such cases as the manufacture of any chemical likely to be used in the preparation of medicinal or food products, where the purification of the sulphuric acid by eliminating the noxious compound is a *sine qua non*. Of the innumerable, but, for the most part, highly unsatisfactory methods of purification hitherto suggested, only two have been successfully applied, and deserve description:

First Method.—All the arsenic is tranformed into H_3AsO_4 by the addition of a small quantity of nitric acid. A little ammonium sulphate is then introduced to destroy the NO_2 thus produced in the mixture, and the whole being carefully distilled, no arsenic comes over.

Second Method.—The chamber or Glover acid is diluted to 45° Beaumé, and charged with an excess of washed sulphurous acid gas. This transforms the HNO_3 and H_3AsO_4 into nitrous and arsenious acids. The liquid is next charged to saturation with hydrogen sulphide, and the vessel is closed and left standing at a moderate temperature to facilitate the precipitation of the sulphides of arsenic and lead. When the supernatent liquid has become perfectly clear, it is introduced into a low, spherical, glass retort, and very quietly distilled.

In most well-conducted works, where concentration to the highest point is not essential, the acid which flows from a constantly operating and properly constructed Glover tower contains so small a proportion of nitrogenous compounds as to render their elimination a matter of secondary importance, even if in the process of freeing it from arsenic they were not simultaneously destroyed by the action of the hydrogen sulphide. When, however, it is desired to transfer the liquid directly from the tower to platinum stills, it becomes necessary to remove even the least trace of nitrogen, and the most effective, and at the same time rapid method hitherto adopted for this purpose is that suggested by Pelouse, which consists in adding to the acid as it flows, by means of a well regulated drip, a one fifth solution of ammonium sulphate in distilled water, in the proportion of about one pint to every hundred pounds of acid. The utter absence of any trace of nitrogen may subsequently be demonstrated by running off a small portion into a glass beaker, adding to it one drop of a solution of potassium permanganate and noting the immediate production of a pronounced red tint. The manner in which the nitrogen is driven off may be illustrated as follows:

$$N_2O_3 + 2NH_3 = 3H_2O + 4N$$
$$3N_2O + 4NH_3 = 6H_2O + 7N$$
$$3NO_3H + 5NH_3 = 9H_2O + 8N$$

(TO BE CONTINUED.)

The Archbald Pot-holes.—Members of the Institute of Mining Engineers will remember how much attention was paid, during the Scranton meeting, to the subject of the glacial "pot-holes" near Archbald, Pa., at the Ridge mines of the Eden colliery. These were described by Mr. C. A. Ashburner, in his paper on the Geologic Relations of the Nanticoke Disaster, and a drawing of one of them accompanying that paper will be found on page 637 of Vol. XV. of the Transactions of the Institute. The pot-holes have also been the object of much interest among geologists at home and abroad. We learn from the Scranton *Republican* of October 5th, that Colonel Hackley, the owner of the land on which these natural curiosities occur, has practically set it apart for the purposes of scientific curiosity, and has expended a considerable amount for the protection of the pot-holes and the convenience of visitors. A letter from Mr. Edward Jones, who has had the work in charge, to Colonel J. A. Price, of the Lackawanna Institute of Science and History, says, among other things: "All the underbrush has been cleared and the ground graded, leaving the shade trees standing, forming a nice little park. I have built a stone wall about one foot from the rim of the pot-hole. The wall will be about four feet in height, forming a square, so as to keep the loose surface earth from falling into the hole. Upon the wall we purpose placing a coping six inches thick and eighteen inches wide, with a suitable railing or fence of sufficient height to keep cattle and visitors from falling in. At present the pot-hole is divided in two by a wooden brattice, for the purpose of mine ventilation. All this timber work will be taken out, so that the entire pot-hole can be seen.

* Copyright by the Scientific Publishing Company, 1887.

† At 10 per cent per annum—the works being calculated to last only 10 years, and to produce during that time 20 tons of acid daily.

THE REYNOLDS HOISTING ENGINES.

Among the skillful mechanical engineers who are the glory of this country, none occupies a higher place than Mr. Edwin Reynolds, the present superintendent of E. P. Allis & Co.'s Reliance Works, Milwaukee, Wis.

Every engineer is familiar with the Reynolds improved Corliss engine which is without a superior in this country, and those acquainted with our water-works know of the remarkable records, much exceeding 100,000,000 foot-pounds duty, of the Allis pumping engines designed by Mr. Reynolds for the Alleghany City, the St. Paul, the Omaha and the Milwaukee water-works, the latter being a triple expansion engine which has given a duty of 115,000,000 foot-pounds per 100 lbs. of coal; but the records of the Allis steam stamps, blowing engines for blast-furnaces and rolling-mill engines are equally creditable to this skillful engineer.

On another page we illustrate the hoisting engines of the Tamarack mine, Mich., which has been designed by Mr. Reynolds and built by the Allis Company. Somewhat similar engines were built for the Osceola Consolidated Mining Company, and two pairs for the Menominee Mining Company (Chapin mine), Mich. The principal dimensions of which are as follows :

	Tamarack.	Chapin.
Diameter of steem cylinders	inches, 16	30
Length of stroke	" 36	60
Diameter of rope drum, large end	feet, 18	21
" " " small "	" 8	13
Length " "	" 12¾	..

These are as fine examples of hoisting engines as we have in this country, and in actual operation are giving great satisfaction. They are provided with every modern improvement.

Only one eccentric is used to run the engines in either direction, and by a peculiar design and application of the link, changes in the lap and lead of the valves are avoided, and all the elements of economy in steam and fuel are preserved whether the engines are running over or under.

The engines are at all times run with the throttle wide open ; the speed and power is determined by the position of the cut-off mechanism, which is controlled and set for any desired speed or power by a lever on the operator's platform.

The reversing gear is operated by a new steam reversing apparatus, which follows precisely the movement of the engineer's reversing lever, and securely holds the link in any position where this reversing lever may be locked ; by this means the engines can be stopped, started, run over or under, without closing or opening the throttle. The working of the entire machine is controlled by levers and hand-wheels, which are conveniently arranged on a raised platform, situated between the two steam cylinders of the engines, exposing all the working parts of the machine to the full view of the operator.

SEPARATION OF PLATINUM FROM GOLD AND OTHER RARE METALS.

Written for the Engineering and Mining Journal by Dr. H. Pirugruber.*

Platinum, like gold, is much distributed in nature, but is nowhere found in profusion. It occurs in a native state in alluvial deposits in the form of grains and nuggets, generally accompanied by gold, indium, palladium, rhodium, ruthenium, osmium, magnetic, titanic, and chromic iron ores, zircon, etc., the largest quantities being found in Granada, Venezuela, Equador, the eastern slope of the Ural Mountains, Australia, Borneo, and California. The whole of the metals are extracted from these sands by washing, and if gold be present, the ore is first lixiviated with chlorine water, and then treated with aqua regia under considerable pressure. The residue from this treatment consists of osmium and indium, and some rhodium and rhutenium, and is called "ore tailing."

The separation of the platinum from the solution depends on the fact that the bichloride of the metals of the platinum group, excepting those of platinum and palladium, are transformed into sesquichlorides, rubidium existing only in the form of a sesquichloride and palladium becoming a monochloride. When treated with potassium chloride, all these sesquichlorides, as well as the palladium monochloride, produce double salts which are soluble in an excess of the reagent, while the platinum bichloride is neither changed nor dissolved. In order to precipitate the platinum bichloride, the solution of the metals is boiled with caustic soda solution, cold alcohol being carefully added to destroy the excess of the soda. It is then acidified with hydrochloric acid, potassium chloride is added and the solution diluted, when the platinum is precipitated in the form of platinochloride of potassium, or $2KClPtCl_4$, which can be reduced with tartaric acid or in a current of hydrogen, the metal being obtained in a porous form called platinum sponge. The oxides of the metals constituting the platinum group are unimportant and decompose easily on heating. Platinum and osmium occasionally make an exception, and according to Bunsen are then in a different molecular state.

From the filtrate of the $2KClPtCl_4$ the other metals are precipitated with zinc or iron, and are called "residues." From the "ore tailings" the osmium is first extracted. The tailings are heated in a porcelain retort in a current of oxygen or air, thus oxidizing all the osmium to the form of OsO_4, appearing as long white needle-shaped crystals which melt easily and emit vapors that exercise a very poisonous effect upon the eyes and lungs. Metallic osmium is produced by passing the OsO_4 vapors through a red-hot pipe, thus decomposing them to Os and O. Metallic osmium may also be obtained by forming the ammonium salt and decomposing the same by heating. In both cases the Os occurs in the shape of a black powder, which has the property of making a non-luminous flame, luminous like the heavy hydro-carbons.

Platinum accompanies many of the rich gold and silver ores, especially those from Huanjacki, and is separated from them in the refining works of Lautenthal in the Harz, by hanging scrap-iron in the solution which has been separated from the gold chloride. The resulting precipitates are treated like the above mentioned residues. In dissolving the original ores at Lautenthal, residues are left which are insoluble in aqua regia, and contain silver chloride when the latter had been dissolved with ammonia. The remaining residues are combined with the ore tailings from which the osmium has been extracted, and the separation of the other metals is then proceeded with. The mass is melted with four times its weight of zinc under a cover of zinc chloride, which will dissolve any zinc oxide that may be formed, as the latter would prevent the ultimate contact of the melted zinc with the other metals.

These latter form an alloy with the zinc and remain in the form of a black powder after treatment with hydrochloric acid. In this form about two thirds of the metals are soluble in aqua regia, but they also contain iron, copper, and lead, which it is first necessary to remove. Iron and copper alone are insoluble in hydrochloric acid, but when alloyed and in contact with metals of the platinum group an electric current is produced which causes a rapid solution. The metals are digested for some time with HCl, until the solution begins to turn brown, which indicates that iron, lead, and copper are dissolved and that the palladium is also beginning to go into solution. The black powder is then filtered out and treated with aqua regia, whereby a residue containing rhodium and ruthenium remains. The solution is now treated with NaHO and the palladium precipitated with KI as palladium iodide, but without the least excess, or it would be dissolved.

This palladium iodide is reduced in a current of hydrogen, and the metal dissolved in concentrated nitric acid. From this solution it is precipitated with potassium chloride. This must be done cautiously, as the bichloride is easily reduced to the monochloride, and, therefore, KCl must be added gradually to the boiling nitric acid solution, whereby nitrous oxide is formed which does not reduce the palladium chloride. Thus produced, it appears in the form of a brick-red powder, of the formula $2KClPdCl_4$, from which the palladium is easily reduced in a current of hydrogen. The palladium having been removed, the iridium is next obtained from the solution by passing through it a stream of hydrogen, and thus reducing all the remaining metals of the platinum group. The color of the solution changes to an olive-green, but before this takes place the iridium, which is the last to be reduced, passes into the form of a soluble sesquichloride. This green solution is filtered. Iridium is contained in the filtrate as Ir_2Cl_3.

The solution of Ir_2Cl_3 is oxidized to $IrCl_2$ with aqua regia and precipitated with KCl in the form of $2KClIrCl_4$ appearing as dark red octahedral crystals, which can be recrystallized from a hot-water solution. Metallic iridium is obtained from these crystals by heating them to a red heat. It has a specific gravity of 22·4, does not melt in the greatest obtainable heat and is unchangeable in the atmosphere.

On adding NaHO to the reddish brown solution of $2KClIrCl_4$ it will be decolorized.

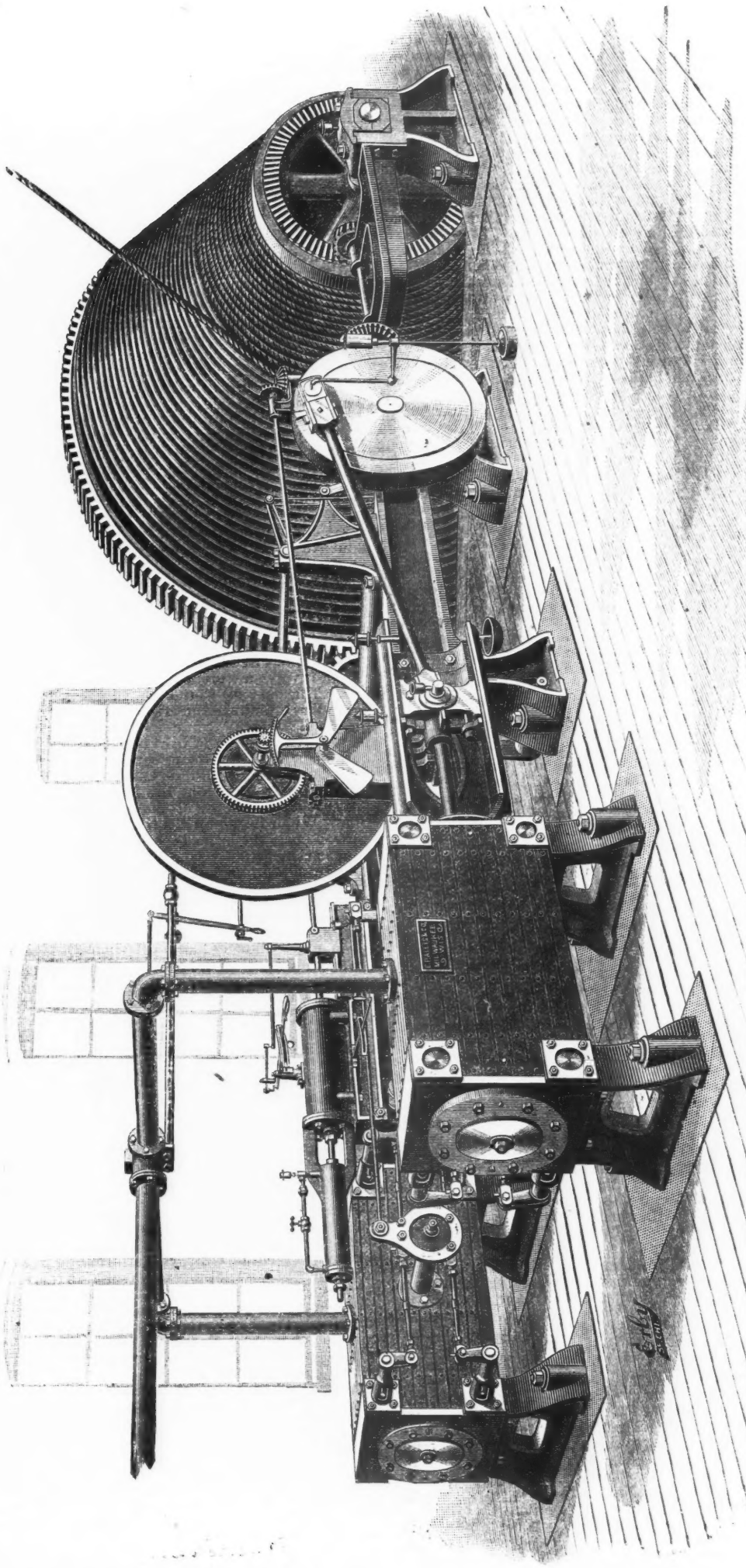
The residues combined with the rhodium and ruthenium left after filtration of the iridium, as described, are treated with zinc and hydrochloric acid in the manner previously indicated. The resulting black powder is heated with $BaCl_2$ in a current of chlorine gas, whereby the poisonous osmium volatilizes in the form of $OsCl_3$. The remaining salt consists of $2BaClRo_2Cl_3$, from the aqueous solution of which the Ba is removed in the form of $BaSO_4$. The filtrate containing Ro_2Cl_3 is treated with acid sodium sulphate forming a yellow precipitate $\left.\begin{matrix}3NaO\\Ro_2O_3\end{matrix}\right\}6SO_2$. This salt is introduced into boiling H_2SO_4 producing by evaporation the salt $\left.\begin{matrix}NaO\\Ro_2O_3\end{matrix}\right\}4SO_3$, which is insoluble in water or acid, and is used for the production of the metal. It is heated with KHO, the residue dissolved in HCl, and the solution reduced with hydrogen. For the determination of this metal the beautiful yellow sesquioxide-hydrate is important. It is produced when the solution of a rhodium salt is treated with KHO and heated, but it is yellow only when perfectly pure.

Ruthenium is extracted from the osmium-iridium, which is melted with zinc and dissolved with HCl in the usual manner, then treated with KHO and $KClO_3$, producing $KORuO_3$, which is soluble in H_2O with a deep orange color. This solution is treated with an excess of KHO, heated with Na_2SO_4, whereby $Ru\,O_3$ only is precipitated. The exact composition of this precipitate is unknown ; it is probably a mixture of the metal and the sulphide.

If the solution of the $KORuO_3$ is precipitated with an acid, the black powder of the sesquioxide-hydrate is obtained, and from this the metallic ruthenium can be produced by reduction in a current of hydrogen. This metal is brittle, has a specific gravity of 12·26 and, with the exception of osmium, has the highest melting point of any substance yet known.

* Translated by O. F. Pfordte, M.E.

Statistics of Theatres Destroyed by Fire.—In a recently published work, Dr. Choquet, of Paris, gives the following figures as to the theatres burnt since 1750; the average of theatres burnt is forty-eight per annum : —The most calamitous of these disasters was that at Cape d'Istria, in 1794, when 1090 persons were killed ; that in St. Petersburg in 1836, which resulted in the loss of 800 lives ; the fire in Canton in 1845, which had 1670 victims ; that of Brooklyn in 1876, with 283 victims ; that of Shanghai in 1871, with 120 victims ; thas of Tientsin in 1872, with 600 victims ; and lastly, that of Vienna, which had 450 victims. February 5th, 1876—Robinson's Opera House, Cincinnati ; false alarm of fire ; 11 killed and 30 injured. April 25th, 1876—Theatre des Arts, Rouen ; 8 killed and 12 injured. October 30th, 1876—Chinese Theatre, San Francisco ; 19 killed, others injured—small fire. November 13th, 1876—Circus Theatre, Madrid ; 2 killed. December 5th, 1876—Mrs. Conway's Theatre, Brooklyn, U. S. A. ; 283 known to have perished. October 11th, 1878—Colosseum, Liverpool ; 37 killed and several injured ; false alarm. January 1st, 1881—Cronstadt Theatre ; 8 burned. March 23d, 1881—Opera House, Nice ; about 150 supposed to have perished. December 8th, 1881—Ring Theatre, Vienna ; about 794 lives lost. January 7th, 1883—Buft Theatre, Moscow ; about 300 lives lost. June 24th, 1885—Temporary Theatre, Dervio, Italy ; about 50 lives lost. August 20th, 1883—Theatre Govi Sumuki, Japan ; 75 killed, over 100 seriously hurt. November 1st, 1884—Star Theatre, Glasgow ; false alarm of fire ; 14 killed, others injured. July 28th, 1886—Tinnively, India ; about 100 natives killed. January 18, 1887—Hebrew Dramatic Club, London ; false alarm of fire ; 17 persons crushed to death. May 25th, 1887—Paris Opera Comique, in which 200 lives were lost.



REYNOLDS'S IMPROVED HOISTING ENGINE, AT THE TAMARACK MINE, MICHIGAN.

ELECTRIC LIGHTING FROM CENTRAL STATIONS.*

By Professor George Forbes, F.R.S.

(*Concluded from page* 238.)

Generators of Electricity.—Having now glanced at the lamps at our disposal for utilizing the electric current, viz., the arc lamp for streets and large halls, and the incandescent or glow lamps for interiors of dwelling-houses, let us look for a moment at the means which we have at our disposal for generating the electric current. There are in general use two ways of generating this kind of energy; the first by transforming chemical into electrical energy, the second by transforming the mechanical energy of water, steam, etc., into electrical energy. The loss in either case need not amount to more than 10 per cent. The apparatus which utilizes chemical action is called a galvanic battery, or simply a battery. The best of these are secondary batteries, in which, when the chemical energy is used up, it can be restored by charging with those machines which convert mechanical into electrical energy. These batteries have two terminals to which the ends of an electric circuit can be attached, and then an electric current flows through the circuit. When the battery is exhausted, a current is sent through it in the reverse direction, and it is renovated. All the machines at present used for converting mechanical into electric energy are founded on the discovery of Faraday, that by moving about a coil of wire in the neighborhood of a magnet, an electric current can be started in the coil. The same coil will experience a force tending to move it if an electric current flows through it while it is in the neighborhood of a magnet. A machine constructed on this principle is usually called a dynamo machine, and it can be used either to convert mechanical into electric energy, or *vice versa*. I will now show by the aid of the lantern a model of such a dynamo running as a motor when an electric current is passed through its coils. I do not wish to waste your time by showing the details of dynamo machines. A dynamo contains generally four special parts: (1) Pieces of iron with insulated wire coiled round them. These are called field magnets, and are fixed in the framework of the machine, or else form part of it. (2) Revolving coils of insulated wire. These form what is called the armature. (3) A commutator consisting of a number of bars of metal connected to the coils and revolving with them. (4) Two wire brushes fixed to the frame-work, rubbing against the commutator bars. To these last are attached the ends of the conducting circuit through which a current is to flow. Part of the electric energy is generally diverted through the wire coils on the field magnets so as to magnetize them. The object of the commutator is to convert the electric current, which is reversed in the coils at each half rotation which they make into a continuous current in the external circuit. I now throw on the screen an end view of such a dynamo, and you will observe the field magnets and brushes which are fixed. But by turning a handle you now see the central armature, and the commutator on which the brushes rub, rotating continuously. You can recognize these four parts in any of the ordinary dynamos. Sometimes, however, there is no object in having a continuous current in the external circuit, in which case the commutator is dispensed with, and the two ends of the wire coils in the armature are connected to two metal rings on and concentric with the spindle. The brushes rubbing on these lead to the external circuit a current which is reversed in direction at each passage of the armature coils from one pole of the field magnets to another. Such machines are called alternating current machines. With a suitably constructed dynamo, and an economical and reliable steam engine, an electric current can be generated cheaply without fear of failure.

Distribution of Electricity.—We now understand the apparatus by which we obtain the electric light. The next question is how to supply a number of lamps from one engine-room. I place a number of lamps in a long chain, so that the same electric current passes through all of them. This is what is called a series arrangement. It has a disadvantage. Suppose one of the lamps be broken, what happens? It breaks the electric circuit. I break one of these lamps placed in series and all the others are extinguished; there is no longer a complete conducting circuit through which the current can flow. Mr. Edison has used another plan. He leads two wires from the two poles of the machine all over the district to form the main conductors, and where he has a lamp he leads two wires from it to the main conductors. A complete circuit is then offered for the current to pass along, and the lamp is luminous. Then I have Edison's parallel system. You see the main conductors to which ten lamps are attached in the way I have described. Now I break one of them, but the others are not affected. This plan is very simple to work, but it is not suitable for carrying the current to a distance, as I will presently explain. When I was asked to choose a subject on which to lecture to you I felt that I should best be discharging my duty if I chose that branch of practical and applied science to which I have devoted the most attention. This subject is the means of distributing electric current to a large district from a central station. In this case a thin wire does not suffice to carry the large current required for all the lamps. Such a wire would get very hot, and more steam power might be used in heating the main conductors than in causing the lamps to shine. It is easy to calculate what size of conductor would be the most economical. I have here two great rods, each a foot in diameter, and this is the size required to supply a district with 100,000 lamps in the most economical way if the conductors were made of the best material, which is pure copper. You can see at a glance that the cost of some miles of such conductors would be prohibitive. The great difficulty of an engineering character which was encountered in the early attempts to introduce central station electric lighting lay in the enormous cost of the copper conductors required to carry the current. This, as much as the Electric Lighting Act of 1882, was the cause of the abandonment of all the earlier schemes. If we do not lay down thick conductors, we suffer in two ways. First, the electric pressure is used up in the mains to such an extent that different consumers along the route of the mains do not get the same electric pressure, and the pressure at each house varies with the amount of light being used in other houses. Secondly, there is a great loss of energy in forcing the current through the thin mains. By thickening the mains we increase our capital expenditure, but we reduce the annual waste of energy in the mains, and it is easy for the engineer to determine the most economical arrangement. On doing this it was found that the cost was prohibitory for supplying large districts. Deeply interested as engineers were in the progress of electric lighting, no engineer of eminence supported these early and crude schemes. The plan originally proposed was to lay positive and negative mains all over the streets, and to connect the lamps singly or in groups to these mains by wires. This can only be done economically in small establishments, where the greatest distance of a lamp from the machine along the route of the conductors is a little more than 200 yards. It is excellent for clubs, hotels, and country houses. If we connect each pair of our lamps in series, so that the same current passes through both, the electric pressure must be doubled, but the current is halved, and at once we have a reduction in the size required for the mains. The disadvantage of this is that if one of the lamps of a pair goes out or is put out, the other lamp of the pair also goes out, as you see when I try the experiment. Here are twelve lamps arranged in six pairs, and when I extinguish one of a pair the other goes out. Now, if I connect together by another wire all the wires connecting the pairs, you will see that when I extinguish one lamp there is still a course open for the current, and no other lamp goes out. I extinguish three lamps of three pairs, and still no other lamp goes out. But you will notice that the three top lamps are fed by the same amount of current as the six bottom ones, and are so much brighter. This is a serious disadvantage, but can be remedied by leading the middle connecting wire, which I just now introduced, to the middle of the battery or other source of electric energy which I am using. Now you see there is no difference in the brightness of the light, however many I may extinguish. This way of using three wires introduces a considerable economy in conductors, and extends the distance to which we can work economically to a quarter of a mile, as has been found from numerous trials especially in America. This is generally called the three-wire system. This, however, still leaves us a long distance from central station lighting on a large scale. The idea of using high electric pressure in the mains commends itself because it cheapens our conductors. We have doubled our pressure by using the three-wire system. Can we advance further in the same direction? If we use 2000 volts pressure instead of 100 volts (the ordinary pressure of a glow lamp), we reduce the copper in our conductors about twentyfold. But it is impossible to permit 2000 volts pressure in houses where people might get shocks and be killed. It has been proposed to charge a thousand cells of a secondary battery in series from a central station, and discharge them to a small district fifty cells in series. This would involve a storehouse for every quarter of a square mile, or even less. The system would be very good were it not for the expense of secondary or storage batteries. This puts the matter at present out of the question. It may come in time. It has the enormous advantage of leaving the system in working order even when machinery gives way, and of storing up an unusual amount of energy for special occasions, such as a general illumination. At present there is only one system thoroughly worked out for using high pressure in the mains and low pressure in the lamps. It is founded upon Faraday's discovery of induction. When I send an electric current through a coil of wire which has an iron core, the latter becomes a magnet, and continues to be one so long as the current is continued. During the act of magnetizing a certain amount of work is done, and is stored up in the magnet. At the moment when the current ceases, this energy is restored by the magnet in the form of additional current. Here I have an electro-magnet with two iron limbs separately wound. The wire of one limb can be connected with an incandescent lamp; that of the other with a battery. I now pass a current through the wire on one limb. Next I connect the glow lamp to the wire of the other limb. I now break the electric circuit, and you see that the glow lamp in the second circuit glows for a moment. The energy stored in the magnet is given up to the glow lamp. An induction coil consists of an iron core surrounded by two coils, one of thick wire, the other some miles long, but of very thin wire. It also has a means for rapidly interrupting the electric current from a battery in the short thick coil. This magnetizes and demagnetizes the iron core. The iron core gives off energy to the long thin coil, and an intermittent current of very high pressure is set up in that wire. You see that long sparks flash through the air from one end of the wire to the other. I now pass the current thus obtained through a resistance equivalent to many miles of telegraph wire, and send it through the tin coils of induction apparatus at the other end of the room. This magnetizes and demagnetizes the iron core, and if I connect the thick coils of the distant apparatus with glow lamps, you see them shine brightly. Here we have a high pressure current which can be sent over a distance of many miles through a thin wire, and then converted into the ordinary low pressure required for lighting purposes. The system, to be perfect, must be worked by a dynamo machine which gives a high pressure current of electricity alternating in direction. The first person to use such an alternating current of high tension in the mains, and convert it by means of efficient apparatus into a current of the ordinary pressure required for the lamps in a house, was M. Gaulard. The system is now largely used both in Europe and in America. An engineer has the greater confidence in recommending this system, because if ever storage batteries become available the same system of conductors will do, and no change need be made.

Main Conductors.—I must now say a word about the main conductors. These may be laid either overhead or underground. The former plan has most generally been adopted in England and America. In America, because the prime cost is less; in England, because the Electric Lighting Act imposes prohibitive conditions on underground conductors, but does not deal with those overhead. For permanent work there is no doubt that underground conductors are the best, and also the cheapest in the end if the contractors are not mulcted for the concession. It has been said that no good system of underground conductors exists. This is sheer nonsense. The plan I will explain is not by any means the only one, but I believe it to be the cheapest, and perhaps the most complete. It has also—which is some thing—the merit of novelty. Gas pipes are laid down in the ordinary way to serve as a trough for the conductors. Gas pipes are used because sixty years'

* A lecture delivered at the Manchester Meeting of the British Association for the Advancement of Science, 1887.

experience has taught us what they will do, and made our workmen acquainted with them, and they cost little. Two porcelain disks in each pipe serve as insulators. They are pierced with three holes (say an inch in diameter) for the three-wire system, and with more or less holes in other systems according to requirements. Through these holes are passed thin split copper tubes, which by springing out grip the porcelain insulators. Into the ends of these the ends of additional lengths of split tubing are squeezed. Thus we get a long length of gas piping, with two or three or more insulated copper tubes. These copper tubes are not the conductors, but serve other purposes. Manholes with sumps are provided at every cross street. Naked wire is drawn through the copper tubes, only as much copper wire being used as suffices for immediate wants. Additional wire can be added as consumers are added to the district. When a house is to be joined to any part of the mains, a hole is tapped in the gas pipe and wires soldered on to the copper tubes, and inclosed in a small iron gas tube screwed into the main pipe. The number of wires can at any time be added to or diminished. When the tube is two-thirds full, it is difficult to pull more wire through. The old wires may then be removed, and a bare cable of wire filling the whole tube drawn through.

Meters.—The only weak part of a system which uses alternate currents with induction coils, is that till lately no meter existed which would measure the consumption of electricity. I am glad to be able to illustrate the principles of a meter which now acts equally well for alternate and continuous electric currents. Here I have a spiral cut out of a circle of paper. It is supported on a point at its middle. A coil of wire is below it, and an electric current passes through the coil and heats it. Thus a current of air is set up by convection, which turns the paper spiral. A train of wheels and pinions is attached for counting the number of revolutions of the vane, and this number is absolutely proportional to the quantity of electric current which has passed through the coil, whether the spindle moves rapidly or slowly.

Metallurgical Products of Liege, Belgium.—The mines of this thriving province produced in 1886 60,000 tons of iron ore, as compared with 74,500 tons in 1885. There were also produced 700 tons of manganiferous ore in 1886. The financial result was relatively satisfactory. The production of pig iron for 1886 amounted to 234,500 tons, at 50·76f. per ton. The production of finished iron was 119,340 tons, at 136·69f. per ton. The production of steel ingots was 136,000 tons. at 76·76f. per ton. The production of finished steel amounted to 114,920 tons for 1886, as compared with 92,400 tons for 1885. During the past year the steelworks of the province consumed more than 26,000 tons of Thomas pig from Belgium.

New Method of Estimating Potash.—Pesier's natrometer was first introduced in 1846 for the valuation of potash in the residues obtained from the calcination of beetroot molasses, and it was soon abandoned for the better method of determining potash by platinum chloride. Herr E. Pfeiffer (*Chem. Zeit.*) states that in the hands of a careful analyst, the natrometer gives with little trouble results well agreeing with those obtained by the platinum method. The apparatus consists of a hydrometer, the scale of which is based on the fact that the density of a potassium sulphate solution increases proportionately with the amount of solid matter in solution. If the solution contains sodium sulphate, the density rises considerably, potassium sulphate being more soluble in the presence of sodium sulphate.

Prevention of Boiler Scale.—The *Chronique Industrielle* contains a communication upon this subject from M. Villon, a chemist and engineer who for the past five months has been making experiments with various tannins in order to ascertain which is the most effective for the required purpose. He states that the best results are given by *Rumex hymenosepalum*, a species of dock that grows plentifully in sandy soils in a large territory on both sides of the Rio Grande, and from there northward over a large portion of Western Texas. The bulbous root—called "canaigre"—is the part used. The roots are produced in clusters weighing several pounds. They contain 25 per cent. of tannin, along with gum, starch, and ligneous matter. A liquid extract is made from them which is purified with acetate of zinc in order to remove the gum and resin, and a brown liquid is obtained marking 20 deg. B. Of this 5 grammes—75 grains—per hydrotimetric degree of water and per cubic meter—264 gallons are used.

Manufacture of Glucose with Nitric Acid.—The originators of this process, A. Seyberlich and A. Trampedach, use nitric acid for the saccharification of starchy or amylaceous matter. To eliminate, then, the nitric acid from the solution of glucose thus obtained, water saturated with sulphurous acid is added in such quantity that the syrup smells of this gas. The mixture, heated rapidly, brings about the decomposition of the nitric acid. At the expense of the oxygen contained in this acid, the sulphurous acid is rapidly converted into sulphuric acid, and nitric oxide is evolved. The reaction is so perfect that no trace of nitric acid can be found with Schönbein's reagent. On heating to boiling, the excess of sulphurous acid is expelled from the saccharine solution. This last operation must be conducted rapidly, and with an abundant supply of steam, so that the saccharine solution shall not remain long in contact with the sulphuric acid formed, as otherwise the sugar would be liable to decomposition. The solution of glucose obtained is neutralized with carbonate of lime, and made alkaline with alkaline carbonates, evaporated and crystallized.

The New System of Coinage in France.—The French government is about to bring in a bill for issuing a nickel-token money as a substitute for the present bronze coins, and proposes to overcome the objection that the new coins from their color may be mistaken for silver by avoiding an exact similarity in the size and weight of the new pieces. The smallest nickel coin, the piece of five centimes, or one sou, would be of the weight of 2 grammes, and of the diameter of 17½ millimeters; the present silver pieces of 50 centimes, which it would most resemble, being of the weight of 2½ grammes, and the diameter of 18 millimeters. The nickel piece of 10 centimes would be of 3 grammes weight, and 20 millimeters. The scheme also comprises the creation of a nickel piece of 25 centimes, or quarter franc, to weigh five grammes, and measure 22 millimeters. The weight would be exactly that of the silver franc, but the coin would be slightly thicker, as the latter has a diameter of 23 millimeters. The weight of two, three, and five grammes for the pieces of 5, 10, and 25 centimes is a departure from the metric system, but as the value given to the coin is only conventional the disproportion is overlooked.

The Production of Iron in Bilbao.—This interesting subject was very fully discussed at the Manchester meeting of the British Association, by Mr. J. Head, M.I.C.E., who, as vice-president of the section, read a paper on "The Iron Mines of Bilbao." He pointed out that the mining properties were defined by imaginary lines with boundary stones at the intersections. They were worked rather as quarries than as mines, as that term is usually understood, there been no winding or pumping shafts, no water adits, and no pumps. The hills containing mineral are gradually cut away in levels or steps. Tunnels were sometimes driven in at the level end of the floor of the deposit as far as the working face, then a shaft down to it, and side entrances. The ore was poured down the shaft and loaded up into wagons in the tunnel. In quarrying, holes are driven into the working faces with a succession of jumpers to a depth of 30 feet. A small charge was exploded at the end to form a chamber, into which a large charge was then introduced and afterward fired. After some observations on wasteful selection, caused by the pressure of consumers and others interested in maintaining a high percentage of metallic iron in all ore exported, the author gave figures showing the cost of raising and putting it f.o.b. to be usually from 4s. 11d. to 5s. 6d. per ton, but he thought it was done in some cases for less. He then entered into the question of probable duration. The area of the known deposits is about 7,000,000 square metres, equal to 12,600,000 tons per metre of average depth. The quantity still remaining was estimated by different authorities from 50,000,000 to 200,000,000 tons, and the duration at from twelve and a half to fifty years. The next question touched upon was whether the ore of Bilbao could be more cheaply smelted into pig-iron on the spot or in England. Inasmuch as 2 tons of ore at 5s. per ton freight were carried in the latter case, against 1 ton of coke at 5s. per ton for freight in the former case, it would appear that Bilbao has the advantage. An import duty of 10d. per ton on coke was balanced by the cheaper labor of Spain. England has, however, better shipping facilities to most neutral markets. Export statistics were given showing that at present hematite pig-iron for British consumption can be obtained more cheaply by importing ore rather than pig-iron, and the same applies to the North of France. The British export trade in the same article has not yet been affected by Spanish competition as regards America, Holland, Belgium, Germany, and Austria. But in Italy, Southern Russia, and Mediterranean ports generally the Bilboa pig-iron exports had increased nearly 300 per cent since last year, and Great Britain seemed no longer able to compete.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book-buyers, give the retail price? These notices do not supersede review in another part of the Journal.]

The Metallurgy of Silver, Gold, and Mercury in the United States. By Thomas Egleston, LL. D., Professor of Mineralogy and Metallurgy, School of Mines, Columbia College, New York. Published by John Wiley & Sons, New York, and *Engineering*, London. Two volumes. Vol. 1. Pages 558, with Index. Illustrated. Price, $7.50.

PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent-Office.

PATENTS GRANTED TUESDAY, OCTOBER 4TH, 1887.

370,768. Process of and Apparatus for the Manufacture of Gas. Samuel R. Dickson, New York, N. Y.
370,776. Duplex Engine. Harvey F. Gaskill, Lockport, N. Y.
370,792. Reel for Wire Rods. William J. Karnes, Cleveland, Ohio.
370,832. Making Metallic Tubes. Andrew J. Upham, Sycamore, Ill., Assignor of one half to Joseph R. Stephens, of same place.
370,841. Hydro-Carbon Furnace. Walter B. Wright, Chicago, Ill., Assignor to Williams & Wright, Troy, New York.
370,871. Apparatus for Agitating Solutions in the Leaching of Metals from their Ores. Frederick T. Hunt, New Brighton, N. Y.
370,876. Tube-Expander. Charles Kane, Jamestown, N. Y., Assignor of one half to Patrick Maher and James L. Weeks, same place.
370,880. Pulverizer. Peter B. Mathiason, St. Louis, Mo.
370,886 Gas Regulator. Wm. S. Patterson, Allegheny City, Pa.
370,887. Journal Bearing for Centrifugal Machines. John C. Poland, Boston, Mass.
370,892. Litharge-Furnace. Samuel C. Rowell, Boston, Mass., Assignor of five eighths to James W. Newell and James W. Newell, trustee, same place.
370,904. Magnesium-Lamp. Hermann Seiss, Marburg, Prussia, Germany.
370,948. Process of Manufacturing Bricks. Heinrich W. Kasten, Hanover, Prussia, Germany.
370,950. Desulphurizing and Purifying Petroleum Oils. Daniel M. Kennedy, Petrolia, Ontario, Canada.
370,952. Drop-Hammer. Frank M. Leavitt, Brooklyn, N. Y., Assignor to the E. W. Bliss Co., same place.
370,957. Apparatus for Manufacturing Gas. Andrew B. Lipsey, West Hoboken, N. J.
370,965. Nail-Cutting Machine. Peter McDermott, New York, Assignor of one-half to Patrick Reilly, Brooklyn, N. Y.
370,971, 370,972. Manufacture of Water Gas. James M. Rose, Allegheny City, Pa.
370,987. Sand Blast Apparatus. John B. Stone and Frederick W. Hindson, Birmingham, County of Warwick, England.
370,990. Rock-Drilling Stuffing-Box. John Tarn and Gustavus A. Schury, Tarrytown, Assignors to George R. Cullingworth, New York, N. Y.
371,006. Device for Making Oil-Wells Flow. John W. Waits, Rouseville, Pa.
371,009. Motor for Pumps. Wm. W. Ward, Eaton, Ohio. Assignor to himself, John R. Cook, and C. A. McNeal, all of same place.
371,027. Composition of Matter for Making Imitations of Stalactites and Grotto-Work. Michael Bagg, New York, N. Y.
371,031. Amalgamating Machine. David Calder and James D. Maclay, Louisville, Ky.
371,042. Method of Making Ballast and Paving Material. Wm. Davy, Kenosha, Wis.
371,063. Pressure Reducing or Regulating Valve. Frederick P. Hays, Warren, Pa.
371,075. Shut-off Valve for Gas Service Pipes. John S. Klein, Oil City, Pa.
371,076. Hydraulic Engine. Samuel N. Knight, Sutter Creek, Cal.
371,078. Automatic Valve for Air-Brakes. Thomas Lanahan, Louisville, Ky., Assignor to himself, George W. Roberts and Charles H. Rice, all of same place.
371,083. Method of Preparing Phosphate Rock for Fertilizers. Victor Lord, Odessa, Del.
371,088. Gas-Pressure Regulator and Cut-off. Edwin C. Merrill, Wheeling, W. Va.
371,129. Manufacture of Compound Armor Plates. Henry C. S. Dyer, Westhope, County of Shropshire, England.
371,157. Injector for Hydro-Carbon Furnaces. Walter B. Wright, Chicago, Ill., Assignor to Williams & Wright, Troy, New York.

THE METALLURGY OF STEEL.*

By Henry M. Howe.

(*Continued from page* 243.)

Combination.—Tungsten, itself exceedingly infusible, unites with iron apparently in all proportions, at least up to 80%. Ferro-tungsten is apparently readily obtained, often as a dark, heavy, slightly sintered mass, by long and strongly heating wolframite, (FeMn) WO_4, or scheelite, $CaWO_4$, preferably with iron or iron oxide, in brasqued crucibles, after roasting to expel sulphur and arsenic, washing, and finally pulverizing. It has been made in the blast-furnace, but a demand for its production on so large a scale in the near future seems hardly probable. When made from wolframite it inevitably and not undesirably contains manganese. As tungsten raises the melting point of iron, alloys with more than 40% of it are rarely made. Ferro-tungsten has been reported for sale in the European markets with 20 to 50 (?) % tungsten and 1·5 to 6% manganese.

Tungsten steel is made by the crucible process, ferro-tungsten of known composition being added to the ordinary charge. Instead of this Mushet recommended a mixture of roasted wolframite and pitch, which could hardly give so uniform a product.

Bernoulli prepared tungsten steel by melting tungstic anhydride, WO_3, with turnings of gray cast-iron, whose graphite he found reduced tungsten to the metallic state, though combined carbon alone did not.[a]

Condition of Tungsten.—Ferro-tungstens appear to consist of a matrix of iron within which various alloys are crystallized. Schneider, digesting ferro-tungsten No. 6, Table 35, in hydrochloric acid (which dissolved about 60% of the whole, though only traces of its tungsten), obtained a residue, magnetically separable into two portions: one, constituting 90% of the whole, contained 24 to 31% iron and 1·4 to 1·6% carbon; was not attracted by the magnet; gained about 26% in weight when heated in air; but was again readily reduced by hydrogen to an alloy whose iron was insoluble in hydrochloric acid. The other, containing 68·1% iron, 4·1% carbon and 27% tungsten, was attracted by the magnet. He appears to consider these residual substances as mechanical mixtures of iron and tungsten: but their easy magnetic separation from each other and the fact that, after oxidation and subsequent reduction, the iron of one remained insoluble in acid, strongly suggest chemical union.[b]

Effects on the Physical Properties of Iron. Tensile Strength.—While steels 3, 10, 14 and 15 in Table 34 suggest that tungsten raises the tensile strength, steels 5 and 17, which differ from 3 and 10 chiefly in having much more manganese, are decidedly weak.

Hardness.—Tungsten renders iron intensely hard. Mushet's steel, No. 3 Table 34, is the hardest which I have met, indenting hardened chrome steel No. 13, Table 32. It is slowly and slightly attacked by a very sharp file. I found hardened chrome steel slightly harder than Crescent hardened steel, and Imperial steel (both unhardened and tungstiferous). All these readily scratch glass. These two tungsten steels as already pointed out differ chiefly from Mushet's in composition in having more manganese. The specimens of Mushet's steel which I have examined do not scratch quartz, but a rich ferro-tungsten made by Bernoulli is said to have scratched quartz readily. Tungsten steel is thought harder than chrome steel: but I do not know that it has been proved to be harder than rich chrome steel. Weight for weight tungsten probably does not increase the hardness as much as carbon and perhaps not as much as chromium; Metcalf found that dies with 1·37% carbon and ·78% tungsten wore much faster than tungstenless ones with 2·37% carbon.[c] Steel may however contain a much larger proportion of tungsten (at least 10%) than of carbon without losing its power of being forged.

Ductility.—Tungsten steel is exceedingly brittle. When bars 3, 5 and 7 were grasped in a vise and struck with a sledge with gradually increasing force, though they appeared to be resilient, they broke without the least perceptible set, and in certain cases flew into many small pieces at the point of fracture like glass. It is hence not only unfit for structural purposes, but even for tools subject to shock, such as rock-drills, cold-chisels, etc. Even the chattering of a lathe is said to be liable to crack it:[d] yet it is successfully used for the knives of nail-cutting machines. The chief normal use of these steels is for the tools of lathes, planers, etc., designed for heavy cuts.

Forging and Welding.—Tungsten steel can be forged only between a cherry-red and a low yellow heat, and then with a difficulty which restricts its use to pieces of simple shape. I here condense the results of my observations in forging it. Only general conclusions can be drawn from these tests, as the smith was not skilled in the use of tungsten steel. The "Crescent" appeared to forge better than the "Imperial" at a low yellow, the "Imperial" better than the "Crescent" at a dull red.

Table 33.—Ferro-Tungsten.

	1.	2.	3.	4.	5.	6.
Tungsten	37	77·8	53·1	29·12	24·25	28·18
Iron	63	16·4	43·4	67·93	30·	68·36
Manganese	.....	5·8	3·5	but little	41·50	0·99
Silicon	.....	.....	.....	·61	.....	0·23
Carbon	.....	.....	.....	1·17	5·65	1·88
Phosphorus	.....	.....	.....	.....	·14	0·008

1. Brilliant, hard, lamellar, more brittle than common iron; **2.** hard, brittle, lamellar; fuses only in the highest heat of furnaces, and **3.** platinum gray, hard, brittle, lamellar completely fusible, Berthier, Percy, Iron and Steel, p. 189. **4.** Hanover, examined by Ledebur; **5.** Terre-Noire, according to Kerpeley; Ledebur, Handbuch, p. 263. **6.** Austrian Alpine Mining Co., Journ. Iron and St. Inst., 1884, I., p. 230. Oest. Zeit., XXXIII., p. 257. This is incorrectly quoted in Stahl und Eisen, V., p. 332, as "68·4 W, 28·2 Fe."

Table 34.—Tungsten Steel.

Source, etc.	Composition. W.	Fe.	C.	Si.	Mn.	P.	Tensile strength, Pounds per square inch.	Elongation, %.
1. Schneider	11·03	.....	2·15	·26	1·49	·007	.....	.....
2. Mushet's special	9·99	.....	1·24	0·33	1·04	·04	.....	.....
3. " "	7·81	.....	1·99	·09	·19	....	146,400	0
4. English	8·25	.....	1·70	0·82	1·26	....	.....	.....
5. "Crescent Hardened," Pittsburgh	6·73	.....	2·06	·05	2·66	....	{ 76,100 a { 94,000 b	0
6. "Imperial," Pittsburgh	6·38	.....	1·6	·16	2·11	....	.....	.....
7. " (another bar)	.....	.....	.....	.....	.....	....	{ 67,000 { 91,000	0
8. Ledebur	8·81	.....	·42	·76	2·57	....	.....	.....
9. "	8·74	.....	·38	·76	2·48	....	.....	.....
10. Styrian	6·45	.....	1·20	·21	·35	...	190,000	0·75
11. Bochum	3·05	95·85	.....	.....	tr	....	.....	.....
12. "	2·71	96·37	.....	.....	tr	....	.....	.....
13. "	1·94	.....	1·43	·19	·44	....	.....	.....
14. De Fenffe	.....	.....	.....	.....	.....	....	153,300	.....
15. " "	.....	.....	.....	.....	.....	....	166,500	.....

1. L. Schneider, Oest. Zeit., 1885, XXXIII., p. 257; Journ. Iron and St Inst., 1884, I., p. 230. **2.** Hard English Mushet's Steel, Metallurgical Rev., II., p. 441. **3.** The same, tested by the author. **4.** Ledebur, Handbuch, p. 263. **5.** Made by Miller, Metcalf & Parkin, tested by the author. **6** and **7.** Made by Park Bros. & Co. and tested by the author. **8, 9** and **10.** Ledebur, loc. cit. **11** and **12.** Percy, Iron and Steel, p. 194. **13.** Ledebur, loc. cit. **14** and **15.** Rev. Univ., 1860, p. 88. **a.** As received from the makers. **b.** Quenched in oil from very dull redness.

I have to thank Messrs. Hunt and Clapp, Pittsburgh, Pa., for the compositions of numbers 5, 6 and 7, which they kindly analyzed for this work.

* Copyright by the Scientific Publishing Company, 1887.

[a] Poggendorff's Annalen, 1860, CXI., p. 581.

[b] Oest. Zeitschrift: 1885, XXXIII., p. 257; Stahl und Eisen, 1885, p. 332.

[c] Trans. Am. Inst. Mining Engrs., IX., p. 549, 1881.

[d] A. Willis (Journ. Iron and St. Inst., 1880, I., p. 92) considers that tungsten hardens steel without making it brittle: and M. Böker (Stahl und Eisen, VI., p. 42), states that it enables us to obtain steel of greater hardening power together with increased toughness. If this be true at all, it can only apply to comparatively small percentages of tungsten: the four tungsten steels which I have examined are astonishingly brittle.

Table 34 A.—Forging Properties of Tungsten Steel.

	Composition.			Temperature.					
	W.	Mn.	C.	Light yellow.	Yellow	Orange.	Full red.	Low red.	Black.
Mushet	7·81	0·19	1·99	Cracks badly	Forges	Bends well	Bends and hammers close together without cracking	Cracks in bending.	
Crescent	6·73	2·66	2·06	Crumbles badly	Bends fairly		Bends well	Breaks when bent at blood red	Cracks after 5 or 6 light blows.
Imperial	6·38a	2·11a	1·6a		Forges but cracks in bending			Bent double and hammered close at very dull red without cracking	Forges better than the preceding.

a This is the composition of a bar similar to the one forged.

This may have been because the Crescent contains more carbon, because of unobserved differences in the conditions of forging, or because of some peculiarities of these particular bars. The general lesson, the limited range of forging temperature, is unmistakeable.

Imperial steel is said to be weldable, but with extreme difficulty: I doubt if it can be truly welded by ordinary methods. Prof. Elihu Thomson, by his electric welding process, welded for me small bars of both Mushet's and Imperial steel so perfectly that I could not, by the most severe tests, detect the point of juncture: Mushet's steel, twisted till it flew apart, revealed no trace of the welded surface.

Hardening.—Even slightly tungstiferous steels are said to be very prone to crack in hardening. I can detect no increase of hardness on quenching Mushet's steel. I found two bars of Imperial steel slightly softer after sudden than after slow cooling; it here resembles manganese steel; indeed it has a notable proportion of manganese. Mushet's, "Crescent Hardened" and "Imperial" steels are employed without quenching, which indeed would be dangerous. Quenched or unquenched they readily scratch glass, but not quartz: as their hardness is not impaired by heat, they may be driven much faster than carbon steel when used as machine cutting tools.

Deterioration.—Chernoff states that after a few heatings tungsten steel becomes oxidized and loses its special properties.[a]

Magnetization.—Tungsten steel is said to be exceptionally retentive of magnetization.

§ 142. Iron and Copper. A. Combining Power.—It is stated that iron and copper unite in all proportions. The alloys of iron with a little copper and of copper with a little iron appear to be homogeneous and stable whether molten or solid: but when these metals are mixed in more nearly equal quantities they often tend to split up into alloys, on the one hand more ferruginous and on the other more cupriferous. These may or may not be of definite composition: they separate more or less completely by gravity, the copper concentrating downwards. Thus Riche[b] found in an alloy made from 94·1% of copper and 5·9% of iron, microscopic gray spots: melting 90% of copper with 10% of pure iron he obtained an ingot which, after prolonged fusion at a high temperature, had four times as much iron in its upper as in its lower portion: while Percy,[c] in an alloy containing 80% of iron (with 20% of copper?) found copper-red particles, which, especially towards the bottom of the mass, were occasionally visible to the naked eye. These were probably in Riche's case a more ferruginous, and in Percy's a more cupreous alloy. When the segregated portion becomes more considerable its particles coalesce and the separation is more complete. But even when the proportions of the two metals are nearly equal, this separation does not always occur, or at least is not always perceptible. Thus Percy (loc. cit.) could detect no segregation in an alloy containing 20% of iron (and 80% of copper?) These facts suggest that copper and iron unite chemically in many but not in all proportions, and hence that if either copper or iron be added to a homogeneous alloy of both, a new homogeneous alloy arises if the new composition permits: if not, the metals rearrange themselves in alloys of some chemically possible composition, separating more or less completely by gravity, perhaps during, perhaps prior to solidification.

The presence of carbon still further diminishes the tendency of copper and iron to unite. If copper and carburetted iron be intimately mixed they again separate almost completely, apparently the more fully the more carbon is present. Thus Mushet found that, though 5% of copper formed on apparently homogeneous alloy with steel, yet when the copper reached 10% minute segregations appeared; if 25% of copper were present much of it sank to the bottom and occurred in knots and streaks. With white cast-iron the tendency to segregation was stronger: if 5% of copper were added to gray cast-iron, copper-colored specks concentrated at the bottom of the ingot, with 9% of copper deep-red leaves separated, and with 16·7% a separate copper button formed beneath the cast-iron.[d] Melting 10% of cast-iron with 90% of copper, Riche[e] found uncombined iron at the top of the ingot: while at Perm[f] (Urals) ferruginous copper ore smelted in blast-furnaces 19 feet high yielded 4 parts of copper containing about 10% of iron, and 3 parts of cast-iron containing 12·64% of copper and 3·03% of carbon. This cast-iron, when remelted, yielded an upper stratum of iron with 0·25 to 2% of copper and a lower one, tapped from beneath the upper, and consisting of copper with 20% of iron. So too Percy,[g] melting spiegeleisen of 8% of manganese with pure copper in luted clay crucibles, obtained cast-iron containing 2·5% of copper together with copper containing 3·67 to 4·87% of iron and 1·16 to 2·82% of manganese. The iron salamanders obtained in copper smelting occasionally contain as little as 1·5%[h] of copper, and I have produced black copper with not over 3 to 4% of iron in contact with these salamanders.

Owing to its low affinity for oxygen all the copper contained in iron ore must necessarily be reduced in the blast-furnace: but if much copper is present most of it may be expected separate by gravity, so that the iron would not hold more than perhaps 2% of it. But the copper which it retains should adhere tenaciously to the iron through all the stages in its manufacture, and should concentrate in the steel, which might thus have 2·5% of copper, necessitating great dilution.

(to be continued.)

[a] Revue Universelle, 1877, I., p., 400.
[b] Thurston, Matls. of Engineering, III., p. 184.
[c] Iron and Steel, p. 150.
[d] L. & E. Philosophical Magazine, 3d series, VI., p. 81, 1885.
[e] Thurston, loc. cit.
[f] Rivot, Principes Généraux du Traitement des Minerais, I., p. 89, and Percy, Iron and Steel, p. 153.
[g] Op. cit., p. 140.
[h] Kerl, Grundriss der Metallhüttenkunde, p. 171.

PERSONALS.

E. N. Riotte, mining engineer, has gone to Mexico on professional business.

Dr. James Curtis Booth, who has filled the position of smelter and refiner at the Mint in Philadelphia, has resigned after forty years of service.

Arthur E. Wood, mining engineer, has been appointed engineer and superintendent of the collieries owned by the Woodward Iron Company, Woodward, Ala.

Thomas A. Armstrong, editor of the *National Labor Tribune*, Pittsburg, and one of the leaders in the Pittsburgh district of the Amalgamated Association, died on the 1st inst.

Mr. M. C. Williams, for several years superintendent of the mills of Andrews Bros. & Co., at Haselton, Ohio, has resigned, having purchased a rolling-mill at Burlington, Iowa.

FURNACE, MILL, AND FACTORY.

The capacity of the furnace of the Katahdin Iron Works, Maine, is to be increased one half.

It is reported that an additional wire-rod mill is to be built by the John A. Roebling's Sons Company, of Trenton, N. J.

The Springfield Rolling-Mill, Springfield, Ill., has been shut down on account of the strike of the coal miners in that district.

Messrs. A. McDonald & Brothers, proprietors of iron-works at St. Louis, Mo., have had a receiver appointed. The assets are said to amount to about $95,000.

The puddle furnace in the rolling-mill of the Brooke Iron Company, at Birdsboro, Pa., exploded on the 6th inst. with terrific force. Work has been suspended for the present.

The Chicago Retort and Fire-Brick Company, of the Town of Lake, Ill., has been organized, with a capital stock of $50,000, to manufacture brick and retorts; incorporators, George C. Hicks, Edward W. Bailey, Charles A. Reed.

A blast-furnace and rolling-mill is to be erected at Duluth, Minn., by a syndicate of capitalists. The blast-furnace will be of moderate size, intended to produce 75 tons daily of coke pig-iron. A large steel plant is also talked of by the same parties.

The Birmingham Bridge and Bolt Company has been organized at Birmingham, Ala., with a capital stock of $100,000. The company will take the plant of the Birmingham Bridge-Works, which, especially in the Bolt line, is quite disproportinate to the demands upon it, and add to it largely.

The Northwestern Iron Company's charcoal furnace at Mayville, Dodge County, Wis., is being remodeled to be operated on coke by the Spring Lake Iron Company, of Milwaukee. The stack is being raised 18 feet, making its total height 67 feet, and its bosh is being widened to 13 feet, while it will be newly equipped throughout.

A material increase in orders is reported since the Clayton Air Compressor Works opened their office and salesroom at 43 Dey street, New York. Among last month's shipments was a duplex air compressor for Japan. These machines are now in use in Russia, Australia, West Indies, Spain, Mexico, Canada, and most of the South American republics.

The new rail-mill at the Edgar Thomson Steel-Works, at Braddock, Pa., is rapidly nearing completion. The three large engines built by E. P. Allis & Co., of Milwaukee, are on the ground and are being put into position. Engines Nos. 1 and 2 are 2400 and No. 3 is 1200 horse-power. The mill is expected to turn out 1000 tons of rails every 24 hours.

The Hubbard Tinning Company, of Hubbard, O., and Hon. J. W. Russell, of West Middlesex, Pa., have decided to combine their capital and stock, including the tin mill at Hubbard and the foundry at West Middiesex, and operate a large foundry at Hubbard. For this purpose a stock company will be organized and additional buildings will be built to the tin mill at Hubbard.

The Union Steel Company, of Chicago, Ill., has been steadily pushing its works up, with a continuously increasing production. The output of steel rails in September surpassed that for any previous month, falling but a few tons short of 17,000 gross tons. The best 24 hours' work in that time was 922 gross tons. In the actual number of rails rolled this was not the best day, the difference being due to the kind of rails made.

St. Louis parties have taken an interest the Mullins Silicated Iron and Steel Company, to the organization of which we referred to in our issue of July 23d. This company will control the patent lately obtained from the United States, England, France, Germany, Spain, Belgium, and Russia, by Major G. G. Mullins. The main feature of the process is said to be "a peculiar use of silica, in the form of crushed quartz or pure white sand, as an alloy and detergent in the production of superior iron and steel, even from the cheapest crude material." (?)

At the annual meeting of the Pennsylvania Steel Company held in Philadelphia this week it was decided to increase the capital stock from $2,500,000 to $3,000,000 and to create a mortgage of $1,000,000 on the property. The following directors were elected: Samuel M. Fitler, Edmund Smith, Charlemagne Tower, W. M. Spackman, H. H. Houston, Luther S. Bent, George Small. The directors re-elected the present officers, as follows: President, Samuel M. Fitler; Vice-President and General Manager, Luther S. Bent; Secretary and Treasurer, Evan F. Barker.

N. W. Wiltbank, counsel for assignee of Robert Hare Powell & Company and Robert Hare Powell, Sons & Company, has arranged a plan for an extension which will be submitted to the creditors at a meeting to be held shortly. The assignees propose to continue the business as heretofore, and to pay the claims against them as rapidly as possible. We referred to these companies in our last issue. The firms of Chipman & Company, of New York, and Campbell & Company, of Boston, who made assignments because of the Powell failure, declared that if the assets of Powell & Sons are as good as stated they will be solvent.

The creditors of Allderdice, Bishop & Co., who recently suspended operations in Warren, Ohio, to which we referred in our issues of September 10th and 24th, have placed the rolling-mill in the hands of five trustees, L. Raney, of New Castle; W. D. McKeefrey, Sharon; George Reeves, Niles; H. B. Perkins and H. C. Christy, Warren. They are to operate it jointly with Henry Wick, of Warren. Mr. Wick is to put in $20,000 to complete the plant, and is to be paid a salary of $4000 per year as manager. He is to have three years in which to pay the claims of creditors, and if all indebtedness is paid at that time, the plant is to revert to him; it is expected to have the mill in readiness for operation within a month.

The property formerly owned by Mr. W. N. Whitely, and known as the Champion Steel and Iron Works, at Springfield, Ohio, has been organized under the name of the Champion Steel and Iron Company, with a capital stock of $100,000, shares $100 each. The officers are: W. T. Stillwell, President; W. N. Whitely, Vice President; James A. Dicus, Secretary; and W. J. Maxwell, Superintendent. The new company proposes to vigorously push the manufacture of its new brand of Champion steel. The rolling-mill is now running to its full capacity, making all kinds of finished steel and iron, and expects shortly to commence double turn.

The export trade of the Ingersoll Rock Drill Company, of this city, is increasing, and among the recent shipments was a complete air compressor plant for operating the Ingersoll power drills at the mines of the Devala-Moyar Gold Mining Company, India. Also for the Zancudo mines, U. S. of Colombia, Central America, a complete plant of duplex air compressor and Ingersoll drills, to be operated by water power, the Ingersoll company furnishing every thing from the water power to the mines. This machinery is to be transported over 100 miles on rough roads on muleback, and is made in sections, no pieces being over 100 pounds in weight. A complete plant consisting of air compressors, power drills, etc., has also been shipped to the Saint Raphael mines, Zacatecas, Mexico. Under the present management, the business of the Ingersoll company has been enormously increased in every direction, and complete equipments of every variety of mining, tunneling and quarrying machinery of the most improved patterns can now be furnished by the company.

CONTRACTING NOTES.

Contracts Open will be found on page xix. New contracts this week: No. 568, Pumping Machinery; No. 569, Iron Work; No. 570, Dredging; No. 571, Sewers; No. 572, Sewerage, Water Supply; No. 573, Three Bridges; No. 574, Iron Work; No. 575, Railroad Bridge.

The Swindell Construction Company, of Pittsburg, Pa., has been awarded the contract from McConway, Sorley & Co., of Pittsburg, for the erection of six natural gas annealing furnaces 18 by 61½ feet.

LABOR AND WAGES.

News from the Lehigh region, Pa., is to the effect that there is no disposition to come to terms with the striking miners, and that the latter are receiving liberal support from their companions in other regions.

The operators of the Packer collieries, at Lost Creek and Brownsville, whose men have been on a strike for three weeks, on the 4th inst. ordered all the repair work at the mines stopped, and discharged the blacksmiths, carpenters and all employés except the pump men.

The miners of the Springfield district, Ill., went on a strike on the 1st inst. for an advance of wages to 67½c. a ton. Their wages have been about 55c. for some time. The miners at Petersburg have also struck, but have since returned to work upon a concession of their demands both for an advance in wages and a check weighman. The coal mines at St. Johns have shut down temporarily, the operators being unable to arrange a contract with the miners. The company offers 60c. per ton for six months, and 50c. for the remaining six. The men ask for 62½c., 56½c and 50c. for four, five, and three months respectively, the last being what the other mines on the prairie are paying.

It was thought that the Bevier miners, Macon, Mo., after considering the conclusion they had reached at their mass-meeting on the 1st inst., to strike for an advance from 70c. to 90c. per ton for mining coal, would accept the proposition of 80c. from one of the operators, but his offer was rejected on the 3d inst., and now the operators are as firm for the present price as the miners are for the 20-cent advance. One firm is replacing the striking miners with outside white and colored labor. There seems to be no doubt that a long strike will be the outcome unless some understanding can be agreed upon.

GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including September 28th, as reported by the Marquette *Mining Journal*, were as follows:

	Tons. 1887.	Tons. 1886.
Marquette, Marquette District	645,740	684,775
St. Ignace, " "	73,253	55,347
Escanaba, " "	694,087	473,704
" Menominee District	904,739	677,412
Ashland, Gogebic District	866,203	542,340
Two Harbors Minnesota Iron Company, Vermillion District	299,083	243,808
Total tons	3,483,105	2,677,386

Shipments of Iron Ore, Gogebic District.—Shipments of iron ore from Ashland, Wis., the mines of the Gogebic District, for the season, up to and including September 28th, are as follows:

	Tons.		Tons.
Anvil	3,589	Norrie	140,177
Ashland	130,276	Norrie East	9,909
Aurora	92,570	Odanah	16,874
Bessemer	8,236	Pabst	7,907
Brotherton	15,924	Pence	1,457
Colby North	56,950	Puritan	23,475
Colby South	128,391	Sunday Lake	10,759
Germania	38,881	Superior	18,118
Iron Chief	2,250	Sherwood	2,3 4
Iron King	36,652	Vaughn	2,101
Ironton	23,110	Trimble	14,389
Kakagon	38,068	South 15	2,582
Montreal	21,657	Parker	578
Nimikon	18,389	Total tons	866,203

The shipment shows an increase of 323,863 tons this year, as compared with the shipments made at the same time last year.

ARIZONA.

PINAL COUNTY.

San Pedro.—This mine, which is owned by St. Louis parties, consists of six claims. Several shafts had been sunk by the former owners, one going down over 100 feet, and one of these shafts is being sunk deeper at a cost of $7 a foot. Horn and native silver have been taken out during the progress of the work.

YAVAPAI COUNTY.

St. Louis & Yavapai Mining Company.—The mill had been started with ten stamps wet on dump ore. A change will be made to five dry stamps as soon as enough ore to be treated that way has been taken out to keep them running for a considerable time. The connection between the drifts of the 800-foot level have been made in a distance of 93 feet, the ore-streak being 10 inches wide and of high-grade ore.

CALIFORNIA.

AMADOR COUNTY.

The Good Hope, Brown Company and Better Hope quartz claims have been bonded to J. A. Ferson, of the Newton copper mine, for $30,000, to be paid within one year. These claims embrace mining rights to over 4000 linear feet along the main mineral belt. It is said to be the opinion that the principal gold bearing ledge of the mother lode is embraced in these claims. They have been idle for many years, owing to the lack of means of the owner to do anything more than the annual assessment work necessary to hold them.

The Doyle quartz mine in Hunt's gulch has also been bonded to J. A. Ferson for $20,000, to be paid on or before June 1st, 1888. The ore-body of this claim is said to be large, and though of low grade, it can be easily and cheaply worked.

Extension Gold Mining Company.—This company has been organized, with a capital stock of $500,000, to work the Giant mine and other properties. The directors are Bernard Rich, Samuel Dixon, and Geary Rich, of San Francisco, and D. D. Reaves and William G. Way, of Plymouth.

MONO COUNTY.

It is reported that W. A. Irwin is about to resign from the superintendency of the Bodie Consolidated and Mono mining companies, and that Capt. John Kelly, who is also superintendent of the Bulwer Consolidated Mining Company, will be appointed to fill the vacancy.

Bulwer Consolidated Mining Company.—The mill is working well and crushing about fifty tons of ore per day. They are stoping ore from the 100 and 200 levels.

Mono Mining Company.—Sinking the Lent shaft to the 1200 level has commenced.

Monte Cristo.—Attachments have been placed on this mine and mill at Cameron to the amount of $4000.

SIERRA COUNTY.

Sacred Mount Consolidated Gold Mining Company.—This company has been organized by I. T. Mooney, J. W. Mooney, R. Sharkey, Samuel Langton, Bert Schlesinger and Len Thompson to work property, situated immediately back of Sierra City, near the Busch ravine. The developments consist of two tun-

nels, also numerous prospect shafts. The main tunnel which is in about 100 feet shows a ledge of gold bearing sulphurets and free milling ore. Arrangements will be made so that work can be continued through the winter months.

CANADA.

PROVINCE OF NOVA SCOTIA.

EASTERN DEVELOPMENT COMPANY, LIMITED.—It is stated that the ore shows wider streaks of the concentrated chelcopyrite as depth is attained. An assay of these streaks or bands of ore just made by the State assayer gives 31·71 per cent of copper. All the concentrated ore streaks of the mine will run 20 per cent copper and over, but when the entire width of the vein is crushed, the intermingled barren rock brings the average down to from 5 per cent to 10 per cent. The vein at the point the samples referred to were taken is 10 feet in width, the depth being 220 feet.

COLORADO.

BOULDER COUNTY.

LEFT HAND MINING COMPANY.—This company has been organized for the purpose of developing the Coffman, Eastern Slope, Rich Isaac, and the Whole lodes on Lee Hill in Gold Hill mining district. The capital stock is $100,000. The trustees are Levi Stone, George F. Coffman and Lida Coffman of Glendale.

CHAFFEE COUNTY.

SILENT FRIEND.—This mine is shut down. An English syndicate has an option on the property which expires in December. Mr. A. Wuensch examined this mine a few weeks ago and reported over $200,000 worth of ore in sight.

LAKE COUNTY.

The Leadville *Herald-Democrat* reports the following:

AMERICAN MINING AND SMELTING COMPANY.—The recent discoveries of ore made by this company in the North Imes mine are proving to be very extensive. The breast of ore is now 28 feet thick and the top is not yet reached. Owing to the difficulty of getting the ore out of the mine, the production has not yet reached more than 25 to 30 tons per day. The ore is hoisted out of a winze by means of a windlass and trammed several hundred feet to the Ruby shaft, through which it is hoisted. The drift has been driven through to the White Cap workings, and the air, which has heretofore been bad, necessitating the use of a blower, is now perfectly good. Arrangements are being made by which the ore can be more conveniently and economically handled. When this is done the production from this mine will undoubtedly be large.

A. Y. & MINNIE MINING COMPANY.—The concentrating mill of this company is now running through about 70 tons of crude ore per day, concentrating about four into one. The ore before dressing runs about 12 per cent lead and averages 45 per cent and 20 to 30 ounces in silver for first class, after being concentrated. When the improvements now in progress are completed, which will be in about a month, the mill will be equipped to handle 120 tons per day with better results than is at present obtained from the smaller amount. Three new jigs and a Hooper slimer are to be added to the plant.

CASSANDRA.—In this mine, located in Buckeye gulch, about 6 miles above Leadville, on the Arkansas River, and owned by F. W. Bowers, a vein of quartz about 7 feet in width has been disclosed. The rock is a regular honey-comb gold quartz, the pay streak, which is about 6 inches in width, carrying 2·65 ounces gold, and an iron streak lying against the pay rock ran 0·4 of an ounce in gold. The quartz is good milling ore, and if the streak holds out it will pay handsomely for working.

CHRYSOLITE SILVER MINING COMPANY.—The iron ore produced by this company goes to the Arkansas Valley smelter.

CONTINENTAL OIL COMPANY.—This company, of Denver, is now erecting two immense iron tanks, one situated at the top of the Carbonate Hill and the other at the Old Harris Sampling Works, to be used for storing fuel oil for use under the boilers at the mines. The oil is not the crude petroleum, but the first product after the burning oil is distilled off, commonly called residium. It is a Colorado product. This oil will be brought in tanks on cars and pumped into the first tank, which holds 560 barrels, and is located near the track. From this it will be pumped through the mains to the other tank, which is of equal capacity, on Carbonate Hill. At each mine desiring to use the oil another tank holding 50 barrels will be placed. Nearly all the mines in reach of the Carbonate Hill supply tank have signified their intention to try the new fuel, and the Iron Hill mines will be supplied as soon as practicable. The work of laying the mains and fitting the pumps is being prosecuted as rapidly as possible so that the work may be completed before the advent of winter. The works, when completed, will cost about $30,000.

IRON SILVER MINING COMPANY.—The first shipment of ore from the Robinson shaft is now being made, and it is said that a good body of rich ore has recently been discovered, in addition to the large and important bodies previously known to exist on this property.

MATCHLESS.—A large Cameron pump has been erected, and the shaft is now being sunk for the second contact.

MONTROSE COUNTY.

MONTROSE PLACER MINING COMPANY.—The placer mining property known as the Lone Tree was transferred in Salt Lake City last week to the Montrose Placer Mining Company, of St. Louis, the consideration being $150,000—one third down and the remainder in ninety days. The property is in the Vixen mining district, sixty-five miles from the Denver & Rio Grande Railroad, on the Dolores River, 150 miles from Ouray, and six miles below the mouth of the San Miguel River. The placer is said to be over five miles long by 1,000 to 4000 feet wide, and includes 920 acres, 600 of which consists of working gravel from 12 to 115 feet deep, and which will yield, it is claimed, from four bits to $7 gross per cubic yard. The location was claimed some six years ago by Salt Lake men, but owing to different difficulties the old company was not successful, and for nearly three years practically nothing has been done, and finally a new company was organized with the following officers: A. L. Horner, President; George F. Neale, Vice-President; Louis Phillipe, Secretary; W. H. Hallett, Treasurer; Capt. N. P. Turner, Superintendent. The capital stock is $5,000,000, shares $10 each, non-assessable. A working capital of $25,000 has been set aside, to be increased to $50,000, so that work can be begun at once on an extensive scale. The first step will be to erect a 5×6 foot flume 2½ miles long from the Dolores River. The old company can take stock at the syndicate rate of $1 per share for thirty days.

OURAY COUNTY.

NEW GUSTON COMPANY, LIMITED.—This company has been organized in London, with a capital stock of £100,000, shares £1 each, to work the Guston mine, which is now shut down, and which is expected to be started up again soon by this company.

DAKOTA.

CUSTER COUNTY.

BLACK HILLS MARBLE AND MINING COMPANY.—This company has been organized, with a capital stock of $250,000, shares $1 each, by Alfred Barton, William H. Carter, Charles Hughes, James Morris, Arthur C. Putnam, Chadron, and Edwin G. Johnson, of Buffalo Gap. The principal place of business will be at Chadron. The purpose is to quarry marble and stone near Buffalo Gap.

TIN MOUNTAIN MINING COMPANY.—Operations at this property, to which we referred in our issue of September 10th, are being continued. The number of men employed will be increased, when the contracts are let for furnishing wood and charcoal.

FALL RIVER COUNTY.

The coal discovered in Red Canyon, Fall River County, twenty-five miles in a southwesterly direction from Custer, has now been determined by development and analytical tests to be of great importance to the Black Hills at large. The original discovery, embracing an area of 640 acres, located by Pilcher, Moore & Co., a half interest in which was recently sold to a Nebraska syndicate, is now receiving the attention of the company, which will result at an early day in its thorough development. The Custer *Chronicle* says that the width of the upper strata is four feet, and it is upon this strata the work of development has been done, while the indications are favorable to the existence of still wider underlying stratas. The strata now being worked has an under stratum of fire-clay, and is capped with sandstone. Recent discoveries, six miles distant from Pilcher, Moore & Co.'s claims, near the Cheyenne River, where a six foot vein has been encountered by Stokes & Company in sinking an artesian well, has created quite an extensive stampede to that section.

PENNINGTON COUNTY.

HARNEY PEAK TIN MINING COMPANY.—It is reported that this company has taken a bond upon property a mile and a half southwest of Hill City, consisting of an improved farm, a saw-mill and water right. The consideration named in the bond is $30,000, and the time fixed for the payment of the same is December 25th of this year. According to press dispatches the report of the English experts, Messrs. M. C. Vincent, H. Seton-Kaar, H. R. Price, of Manchester, and John Taylor, of Taylor & Sons, of London, who have just examined this property, is a favorable one, and it is believed by those in a position to know that a sale of the property will be made to English capitalists.

IDAHO.

ALTURAS COUNTY.

MINNIE MOORE.—A strike was made some 10 feet distant west from the 750-level of the main incline. The ledge is said to be over four feet wide, containing high-grade ore.

PHILADELPHIA & IDAHO SMELTING COMPANY.—One of the four smelting-furnaces of the Philadelphia & Idaho Company at Ketchum is working steadily, and a second stack is being put in readiness to "blow in." The outlook is so favorable that the company expects to be in operation all winter.

ILLINOIS.

CHAMPAIGN COUNTY.

Champaign capitalists are now offering to pipe Tolono natural gas, to the strike of which we referred in our last issue, a distance of nine miles to that city, provided a sufficient flow can be obtained. They have failed to secure the desired concessions from the Champaign City Council to bore there.

MACOUPIN COUNTY.

MOUNT OLIVE CONSOLIDATED COAL COMPANY.—This company has struck the expected vein of coal at Mount Olive at a depth of 407 feet. The vein is said to be nine feet wide.

KENTUCKY.

M'CRACKEN COUNTY.

PADUCAH LAND, COAL AND IRON COMPANY.—This company owns considerable property in and about Paducah, situated on the Ohio River, at the mouth of Tennessee and on the line of Newport News & Mississippi Valley Railroad, which gives the city direct connection with the South, East and West; two other railroad lines are now in course of construction, and will be in operation within a year. The lands of the company are said to contain large beds of brown and red hematite ore, and in the vicinity there are coal deposits, which make good coke and can be used in the production of gas. The company makes an attractive offer of financial aid to parties who wish to erect machine shops, rolling-mills, furnaces and other factories.

MEXICO.

It is said that Robert R. Symon has, at the request of the government, made over his concession for a railway in the States of Sinaloa and Sonora to a company composed mainly of Philadelphia capitalists, who will build a coast line running up from the seaport of Mazatlan to Culiacan, the capital of the State of Sinaloa, and thence on through fine hardwood forests and rich mineral and coal lands to Posquiera, on the line of the Sonora railway, and thence the road may be run later on to some convenient point on the American border. Governors Canedo and Torres, of the States of Sinaloa and Sonora, respectively, are said to be behind this undertaking. This line will give the Sonora road a good feeder, and contribute powerfully to the development of the two States mentioned.

MICHIGAN.

COPPER MINES.

CALUMET & HECLA MINING COMPANY.—No. 2 shaft of the Hecla mine was opened last week, and the pipes through which the steam and carbonic gas were sent down during the fire taken out. The repairing of the shaft was begun at once, for it is necessary that the pumps in this shaft be set to work as soon as possible, in order to speedily rid the mine of water in the lower levels. The product of the stamp mills for the week ended on the 3d inst. was 592 tons 385 pounds of mineral, against 541 tons 110 pounds for the previous week. Two weeks show a total output of 1133 tons 495 pounds, or within 214 tons of the product for the whole month of August. The average monthly product for the seven months this year before the fire broke out was 2637 tons, or an average of 615 tons 666 pounds per week.

HURON COPPER MINING COMPANY.—The addition to the stamp-mill is almost completed. The new slime tables are being set up and will shortly be in working order. Plenty of rock is coming down to the stamp-mill from the rock house to keep the two stamps in operation. A new pump is being set up just below the dam.

MASS.—At this mine only four men are working on tribute.

RIDGE.—They are now unwatering the fifty fathom level at this mine, as the water has risen to it. The tributors are beginning to prepare to clean and hoist the copper produced by them during the summer, which has been small. It is expected that quite a force of tributors will be at work in the mine during the winter.

TAMARACK MINING COMPANY.—At the annual meeting, held in Boston on the 6th inst., the following were re-elected: Messrs. Joseph W. Clark, Nathaniel Thayer, John M. Forbes, George F. Bemis, John N. Denison, Horace Fairbanks and John Daniell. The product for September was 500 tons 110 pounds, against 211 tons 355 pounds for the same month last year. The percentage of rock stamped in September this year was $4\frac{33}{100}$ mineral.

IRON MINES.

ANVIL IRON MINING COMPANY.—The special meeting of the stockholders of this company, recently held in Milwaukee, was for the purpose of taking action toward bonding the property to pay its indebtedness of $80,000. Owing to the fact that the laws of Michigan had not been complied with, that action was delayed until a future meeting, to be held a month hence. For temporary purposes the stockholders agreed to advance $40,000, taking for pay the notes of the company, which shall be exchangeable for bonds when issued. Mr. Parker, of the firm of Parker & Hoyt, made an offer of $6.50 per share for 21,000 shares of the stock, but this offer was refused.

MISSOURI.

JASPER COUNTY.

Operations have begun sinking a well for natural gas at Carthage. The contract calls for a well 2000 feet deep.

ORAH MINING COMPANY.—This company has been organized in Joplin by H. D. Sedgwick, of New York; L. Riseling and W. H. Proudfoot, of Joplin; C. J. Hubbell and R. Stultz, of Oronogo. The company has secured a favorable lease of the J. B. Sargeant land, a short distance west of Oronogo, and is already putting down the third prospect shaft.

MONTANA.

DEER LODGE COUNTY.

PHILIPSBURG SILVER MINING COMPANY.—This company has been organized with a capital stock of $5,000,000; shares, $10 each. The trustees are John T. Murphy, T. C. Power, Henry Klein, S. T. Hauser, Robert S. Hale, Ed. I. Zimmerman, Phil. M. Sanders, Charles K. Welle, and A. M. Holter. The principal office will be in Philipsburg, but offices may also be

opened in Helena and St. Louis. The company will work the North Granite, which will be immediately fitted with a big hoist and developed by a shaft 300 feet below the present tunnel level.

JEFFERSON COUNTY.

PENN YAN MINING COMPANY.—This company, to which we referred in our issue of September 24th, has placed about 100,000 shares of the capital stock, at sixty cents per share.

SILVER BOW COUNTY.

ALICE GOLD AND SILVER MINING COMPANY.—We take the following from a letter addressed by the president of the company to the employés, dated September 24th :

On account of the uncertainty existing in the public mind, caused by the issuance of a resolution adopted by the Board of Directors of the Alice Gold and Silver Mining Company, at Salt Lake City on the 3d of September, in the matter of the Union Pacific Railway charging the Alice Company $15 per ton for salt delivered at the Butte depot, I desire to say that several interviews have been had with Union Pacific officials, and at a meeting held on the 15th September, and at one held subsequent thereto, at Salt Lake City, where Mr. Monroe, Assistant General Traffic Manager, was present, and at which meetings the question was discussed, he was informed that the Alice Company would continue to run if the railway company would deliver salt at the Alice Company's works at $7.50 per ton. Since then no answer has been received. I have been informed that Vice-President T. J. Potter will visit Butte in the near future to determine the question at issue. In accordance with the resolution of the Board of Directors, heretofore referred to, and in the absence of any action on the part of the Union Pacific officials, the mines and works of this company will be closed on October 1st. I trust, however, that the Union Pacific officials will see the necessity of delivering salt at $7.50 per ton, this being $1.50 per ton more than this company pays for coal, delivered at the Butte Station. Just as soon as they concede and adopt such a reasonable rate for the delivery of salt, orders will be issued to Superintendent Hall to commence running at once.

GAGNON.—Preparations are being made to sink the two compartment shafts 100 feet deeper, the present depth being 600 feet. As the skip can not be used in sinking, and as work can not be interfered with in the upper levels, it will be necessary to make three compartments below the 600-foot level, using one compartment entirely for hoisting from the shaft as sinking goes.

NEVADA.

ELKO COUNTY.

The extensive shale deposits on the Humboldt River near Elko are being utilized. A lot of the shale has been taken west to Reno to be used as fuel in the furnace at the reduction-works.

COMMONWEALTH MINING COMPANY.—Work in the shaft has been stopped until machinery can be erected. Prospect shaft has been sunk 10 feet. Work on the hoisting works has commenced.

FOUND TREASURE MINING COMPANY.—The engine and boiler have been placed in position during the week. The frame of the shaft-house is now being raised, and it will require but a few days to complete it.

NEVADA QUEEN MINING COMPANY.—On 200-foot level, No. 1 drift, west ledge, the vein is not looking so well in the face as heretofore. Stopes just started over this drift are showing good ore. South drift from No. 1 east cross-cut, on the east vein, is yielding fine ore; also the north drift from same place, ore from both drifts being high grade. Intermediate drift from winze is north 20 feet, south 10 feet. Ore still continues in the face of both drifts, same high-grade ore as in the winze. In No. 2 cross-cut east, small stringers of ore just coming in the face. No. 1 west cross-cut, 350-foot level, is cutting seams of clay and spar and some water.

NORTH BELLE ISLE MINING COMPANY.—Regular operations in the mine have been temporarily suspended, pending the erection of the new gallows frame and removal of the old hoist.

PONDERE MINING COMPANY.—Sinking was resumed on the 26th ult. The rock is hard and does not break well, therefore progress is necessarily slow. Total depth of incline shaft, 96 feet. Lodge improves as greater depth is attained.

LINCOLN COUNTY.

YUBA.—This mine, which is owned by Messrs. Jas. McFadden and R. H. Elam, was bonded some time ago to Sam. Godbe, the owners representing that certain bodies of ore left by the American Flag Company as unprofitable to work when the milling charge was high and shipment of refractory ores impracticable, were uncovered on the 9th and 10th levels, the shaft being then in such a condition that these levels could not be inspected. Mr. Godbe put the shaft in order, and on reaching the 10th level found the statements of the owners more than justified by the facts. The shaft is an incline at an angle of about 80 degrees, the same as that of the ledge. From the 9th level a winze has been sunk, uncovering what appears to be the apex of a body of lead ore, some parts of which carry zinc. As sinking continues in the winze, which is now about 35 feet deep, the ore-body lengthens east and west, that being the general direction of the vein. At one point in the winze it is 5 feet wide, and the superintendent's average sample gave him an assay of 100 ounces of silver and 50 per cent lead. While much of the ore so far uncovered in this body is poorer than this, yet much also is richer, some running above 250 ounces silver, and some as high as 70 per cent in lead. On the 10th level this ore body has lengthened to 60 feet, and has there a width varying from two to four feet. A few car loads will shortly be shipped for a working test. In the mine there is a considerable body of low-grade milling ore which has never been explored, as when the mine was worked in former days nothing lower than 30 ounces ore was considered worthy of extraction on account of the great cost of milling at Pioche.

The shaft is sunk 200 feet below the 10th level but no station made. There remain, therefore, it is said, 635 feet on the plane of the incline of virgin ground before reaching the water level of the country, as shown in the Raymond & Ely Meadow Valley shafts.

EUREKA COUNTY.

EUREKA CONSOLIDATED MINING COMPANY.—The company is having the speiss dug up out of the streets at Eureka, where it has been used for several years for paving. It was supposed at the time whed it was put there that it had no economic value, but L. W. Davis, the superintendent of the reduction works, in making some experiments found that between the furnaces and Fletcher's stable there is a very large but unknown quantity of this stuff which contains a considerable amount of gold and silver.

STOREY COUNTY—COMSTOCK LODE.

We condense the following from the Virginia City *Chronicle:*

ALPHA MINING COMPANY.—Sinking the shaft below the 222 level is now in progress. It will be sent down 100 feet to explore the downward continuation of the ore development made on the 222.

ALTA MINING COMPANY.—The ore extracted in upraising above the 1150 is accumulating on the dump awaiting the completion of the new stamp-mill.

BALTIMORE CONSOLIDATED MINING COMPANY.—The pump has been started, and the extent of the ore development made on the 338 will now be ascertained, as there is no danger of that level being flooded by the flow tapped in the west drift when the powerful pump is in operation.

BELCHER MINING COMPANY.—Operations are confined to preparing for the extraction of ore from the 1600 and 1700 levels, which will be resumed early this month.

BEST & BELCHER MINING COMPANY.—On the 425 level from the Gould & Curry north line the north drift is in quartz and clay giving low value by assay.

CHOLLAR MINING COMPANY.—Stamps by October 15th. The delay in getting the mill running is due to the foundry not being able to get the castings ready at an earlier date. The starting up of the mills and mines next month will give employment to nearly 500 men above the number now working on the Comstock lode.

CONSOLIDATED CALIFORNIA & VIRGINIA MINING COMPANY.—The north drift on the 300 level being advanced from the Best & Belcher is showing low-grade quartz, which is believed to be the upward continuation of the ore-development made further north on the 1400. During the week ended the 24th ult., 1082 tons of ore were shipped to the Morgan mill, and 602 tons to the California mill. The average assay value of all the ore worked at both the above mills during the week, according to battery samples, was $26.54. The weekly report states that more ore could easily be extracted from the mine, but they are limited in that respect on account of the want of crushing facilities. The low stage of water has deprived the company almost entirely for the present of the crushing power of the Eureka mill. The twenty stamps at the California mill, making a total of forty of the eighty stamps, and which are operated by steam power, were to be started last week. The additional forty in the mill are being overhauled, and on October 10th the full complement of eighty will be in operation propelled by water power, representing a total daily crushing capacity of 340 tons.

JUSTICE MINING COMPANY.—The ore accumulated is daily being added to by that extracted in explorations in progress on the 350 level.

OCCIDENTAL CONSOLIDATED MINING COMPANY.—In No. 2 upraise 100 feet on the slope below the upper tunnel they are cutting out a working station. The station is showing ore of milling value. On the 100 level the north incline winze has reached the 200 level. Are now drifting north to connect with the south drift, which will shortly be completed, and will form an important air way.

POTOSI MINING COMPANY.—On the 450 level a south drift is being advanced from the Sharon shaft to strip the downward continuation of the vein of ore exposed on the 250 and 350 levels.

UTAH MINING COMPANY.—On the 472 level, from the end of west cross-cut No. 5, a north drift was advanced, and is in quartz and clay, the former showing value by assay.

YELLOW JACKET MINING COMPANY.—Superintendent Sharon authorizes the *Chronicle* to state officially that the Yellow Jacket will begin shipping 200 tons per day October 1st to the Brunswick mill, which now has a complement of 76 stamps, all of which will begin dropping on the date mentioned, operated by both steam and water power.

NEW YORK.

MONROE COUNTY.

Coal oil has been struck on a farm twelve miles west of Rochester. The ground was bored for an artisian well, but the oil was reached in a bed of rock. Small particles of what appear to be anthracite coal were found on the drill.

OHIO.

STARK COUNTY.

LAKE VIEW COAL COMPANY.—This company, which has for some time been sinking a new shaft about one mile and a half south of their old coal bank, south of Massillon, struck a four-foot vein of coal at a depth of 125 feet. The new mine is located on a branch of the Valley Railway.

PENNSYLVANIA.

COAL.

Messrs. O'Neil & Sons, of Coal Valley, have commenced operations looking toward the opening of a new mine at Fayette City, to develop a large tract of coal land at that place owned by them.

PHILADELPHIA & READING COAL AND IRON COMPANY.—A pillar in the west mammoth gangway of the East colliery gave way on the 2d inst., bringing with it a large amount of gas, which suffocated the workmen and rendered escape impossible to those in that gangway. The men in the neighboring breast heard the tremendous rush of air, and escaped by fleeing to the bottom of the slope. Three men and two boys were suffocated and nineteen others overcome with gas.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to October 1st:

	1887. Gallons.	1886. Gallons.
From Boston	3,277,547	4,091,492
Philadelphia	122,384,453	112,706,856
Baltimore	6,496,152	12,581,444
Perth Amboy	12,556,908	3,998,017
New York	280,124,231	296,838,339
Total exports	424,839,291	430,216,148

WASHINGTON OIL COMPANY.—This company, whose purpose is to mine for and deal in carbon oil or petroleum, will shortly apply for a charter.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Oct. 7.

Statistics.

Production Anthracite Coal for week ended October 1st, and year from January 1st :

Tons of 2240 lbs.	1887. Week.	1887. Year.	1886. Year
P. & Read. RR. Co.	160,582	5,353,639	8,405,757
Cent. R. R. of N. J.	89,588	3,685,750	*
L. V. RR. Co.	96,731	4,749,802	4,508,822
D., L. & W. RR. Co.	152,687	4,146,926	3,632,551
D. & H. Canal Co.	100,789	3,759,765	2,656,453
Penna. RR.	48,776	2,450,432	2,315,903
Penna. Coal Co.	37,386	1,096,734	1,000,162
Penna. Canal Co.	15,607	341,552	343,700
Total	702,146	24,624,600	22,683,348
Increase	4,213	1,941,252	
Decrease			

* Included in tonnage of Philadelphia & Reading RR.

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period :

1882	21,027,176	1884	22,454,828
1883	22,997,226	1885	22,042,884

Production Bituminous Coal for week ended October 1st, and year from January 1st :

Tons of 2000 pounds, unless otherwise designated.

EASTERN AND NORTHERN SHIPMENTS.

	1887. Week.	1887. Year.	1886. Year.
Phila. & Erie RR.	757	15,207	7,884
Cumberland, Md.	†70,000	2,343,072	1,755,956
Barclay, Pa.	3,167	137,704	141,999
Broad Top, Pa.			
H. & Broad Top. RR.	8,278	242,262	283,824
Clearfield Region, Pa.			
Snow Shoe	3,780	121,481	78,469
Karthaus (Keating)	3,628	136,155	102,104
Tyrone & Clearfield	58,461	2,357,894	1,573,116
Tipton	373	12,291	
Alleghany Region, Pa.			
Gallitzin & Mountain	13,679	715,814	507,462
Pocahontas Flat Top Coal.			
Norf'k & West. RR.	22,803	838,577	637,057
Kanawha Region, W. Va.			
Ches. & Ohio RR.	35,000	1,034,416	*897,421
Total	212,926	7,954,867	5,985,272

* Tons of 2240 lbs.

† Estimated for ten days ending September 30th.

WESTERN SHIPMENTS.

Pittsburg Region, Pa.			
West Penn RR.	5,274	223,851	244,596
Southwest Penn. RR.	1,615	86,072	108,073
Pennsylvania RR.	4,647	157,564	205,204
Westmoreland Region, Pa.			
Pennsylvania RR.	35,667	1,152,025	889,134
Monongahela Region, Pa.			
Pennsylvania RR.	6,523	311,741	296,809
Total	53,726	1,931,253	1,763,808
Grand total	273,652	9,886,120	7,749,080

Production of Coke on line of Pennsylvania RR. for week ended September 30th, and year from January 1st.

Tons of 2000 pounds.

	1887. Week.	1887. Year.	1886 Year.
Tyrone & Clearfield	...	1,735	.....
Allegheny Region	6,423	185,899	139,594
West Penn. RR.	2,099	83,544	80,438
Southwest Penn. RR.	70,818	1,047,478	1,964,164
Penn. & W. Region.	9,061	249,592	245,293
Monongahela	2,493	89,750	108,356
Pittsburg Region	....	38	75
Snow-Shoe	990	38,637	19,982
Total	91,879	1,696,703	2,555,542

Anthracite.

The coal trade is in an excellent condition, and some sizes, notably egg, are in such demand that prices are more or less nominal. Actual ruling prices for free burning coals may be quoted about as follows f.o.b. New York shipping ports.

Broken, $3.80@$3.90; Egg, $4.10@$4.25; Stove, $4.35@$4.50; Chestnut, $4.25; Pea, $2.75@$3.00; Buckwheat, $2.25.

There is a good deal of difference in price between the different dealers, and a good deal of variation in the prices of the same seller, according to his customer. "Old friends" of the companies have the best place, and some coal has been sold net during the week at about the circular price, which we quoted last week, of Broken, $3.65; Egg, $4; Stove, $4.25; Nut, $4.10; Pea, $3; but we have heard of $5.50 being paid for Lehigh Broken and Egg f.o.b., where a party was willing to pay for preference.

We may remind our readers of the many times we advised them early in the season to lay in stocks of coal, and we know that some followed our advice, and are congratulating themselves. Now in some cases there is an undue anxiety to buy, and the same order goes around through the entire trade, because it is not easily filled, thus giving the market an excited appearance.

The strike in the Lehigh region, of course, almost stops the production of that kind of coal, but consumers will find but little difference between that and the other anthracites, and will quickly accustom themselves to the free burning varieties. The actual total output of anthracite will not be very greatly affected by the strike, for the limit of production is in the transportation facilities, and these will be transferred from the Lehigh to the other districts.

The Lehigh operators appear to be fully decided to settle now this question of the interference of the Knights of Labor in their business, and there will be no concession on this point. It may be that the men when they realize this fact will wisely make their peace each with his own employer, and allow the Knights of Labor to console themselves by exacting something more from the Reading, which appears willing to give them all they ask.

Bituminous.

The soft coal market shares in the improvement in anthracite, and we have heard of some Cumberland selling as high as $3.70 alongside, while standard Clearfield brings full circular price, $3.50, with a great difficulty in getting spot coal. Some of the poorer Clearfield coals are still obtainable 20 cents below circular price.

The Pocahontas Company has been sending a good deal of coal here during the past week or ten days, and is now able to deliver spot coal at $3.50 alongside.

The Pocahontas Company does not suffer from any lack of cars, as do the Cumberland and Clearfield companies, and as vessel freights from Norfolk are extremely low (down to 75 cents), this company expects to deliver a good deal of coal here during the next month. The reputation of Pocahontas coal as an excellent steam fuel is indorsed by all who have used it, so that those who have of late feared a short supply of fuel will find this a welcome addition to the available stock.

The output of Eastern bituminous coal this year has exceeded the output of the corresponding nine months in 1886 by about 2,000,000 tons, or about 35 per cent increase. The production of anthracite has increased about 2,000,000 tons, or say 11 per cent this year, and yet for years there has not been as great a scarcity of coal in this market. This is the strongest possible testimony to the active condition of our manufacturing industry.

Boston. Oct. 5.

[From our Special Correspondent.]

The anthracite coal trade is in a very strong condition, judged by the movements of jobbers and agents at this port. The quoted f.o.b. prices are little better than nominal, and it would be hard just at this time to give figures near the market, as there is considerable variance, according as shippers are supplied. The trade consuming and distributing here would readily buy at the prices of September, but can not get the coal, and it looks as if an advance of 25 cents per ton could be obtained now on most sizes. As high as $4, f.o.b at New York, or 20 cents advance, has been obtained on egg coal without difficulty for some days, and broken coal is about as firm. The distributing trade in most towns and cities outside of Boston is well supplied. There is need of more coal in Boston, however, and large orders could be booked if agents would accept old rates.

It is so out of the usual course of affairs as to be worthy especial mention that the tardy buyer of bituminous coal "gets left" this year. For several seasons the waiting policy has been a good one for those whose convenience it suited, but now bituminous coal is higher, by at least ten cents a ton, than at the opening of the season, and is in light supply at tidewater. It would be hard to buy bituminous of good quality under $2.60 f.o.b. Delivered rates range from $3.85 to $4.

Vessels are rather scarce than otherwise. It is thought that minimum rates will be fixed as high as in the past season, as small vessels have made no money. While the Vessel Owners' Association has done remarkably well to hold together as long as it has, it looks rather dubious for it now, because of the increasing competition afforded by the rapidly growing fleet of barges. The barges run at low rates. The gross rate may be the same, but allowances for quick discharging and in other ways make barges about ten cents cheaper where they can be used as advantageously as vessels.

We quote vessel rate, exclusive of discharging: New York, 75@85c.; Philadelphia, 95c.@$1.05; Baltimore, $1.05@$1.15; Hampton Roads, 95c.@$1.05.

Retail trade is very good indeed, and the chances are that an advance will be maintained.

We quote delivered prices: Stove, $5.75; Egg, $5.50; Furnace, $5.25; Nut, $5.75. Wharf prices are: Stove, $5.25; Egg, $5; Furnace, $4.75; Nut, $5.25; Franklin, $6.50; Cumberland, $4.15

Buffalo. Oct. 6.

[From our Special Correspondent.]

Anthracite coal has advanced in price 25c. per ton, wholesale and retail. The published schedule is as follows:

Sizes.	2240 lbs. f.o.b. vessels, at Buffalo.	2240 lbs. On cars delivered at Buffalo and bridges for shipment west.	2000 lbs. Delivered within the city limits.
Grate	$5.00	$5.00	$5.25
Egg	5.00	5.00	5.25
Stove	5.25	5.25	5.50
Chestnut	5.25	5.25	5.50
No. 4	.....	.....	5.75
Pea	.....	.....	4.50

No new features worth noting, either in the hard or soft coal trade. Coke also unchanged.

This is what the *Courier* says relative to the advance in anthracite: "Coal up to $5.50 a net ton, and nobody appearing to know of any special reason for the last advance, except that it pleased the Exchange to tack on another quarter. Those people who have yet to lay in their winter supply now grieve, if they do not curse. They could have saved 75 cents a ton if they had bought in the early part of the season. It is hardest, though, on the poor, who have to buy in driblets through the winter."

Chief Engineer Buckbolz, of the Erie Railroad, arrived here last night. His object is understood to be to look over the ground and select a site for a large coal-stocking trestle.

The severe storms on the lakes last Monday and Tuesday, although proving very disastrous, do not appear to have resulted in the loss of any coal-laden vessels.

The shipments of coal by lake westward from September 29th to October 5th, both days inclusive, were 63,783 net tons, namely, 30,860 to Chicago, 12,600 to Milwaukee, 4900 to Duluth, 1980 to Toledo, 2870 to Detroit, 1900 to Superior, 2650 to Green Bay, 620 to Racine, 1250 to Saginaw, 650 to Menominee, 630 to Windsor, 850 to Port Arthur, 1000 to Ashland, 650 to Sheboygan, 100 to Bay City, 250 to Port Dover. Total for the season, 1,382,080 net tons, including vessels from Tonawanda.

The distribution of coal by lake from Buffalo thus far this season includes 481,000 tons to Chicago, 285,000 to Milwaukee, 132,000 to Duluth, 87,000 to Superior, 23,500 to Washburn, 52,000 to Toledo, 23,000 to Detroit, 14,500 to Racine, 1900 to Evanston, 3200 to Bay City, 6300 to Kenosha, 3400 to Kincardine, 19,000 to Green Bay, 2000 to Sandusky, 12,000 to Sheboygan, 15,000 to Saginaw, 12,000 to Marquette, 4800 to Port Arthur, 7200 to Lake Linden, 1000 to Kelly Island, 3500 to Hancock, 8000 to Ashland, 1400 to Menominee, 1000 to Marine City, 2000 to Port Huron, 2000 to Houghton, 1300 to Escanaba, 1500 to Windsor, 500 to Tamas, 400 to Alpena, 600 to Muskegon, 630 to St. Ignace, 500 to Barega, 587 to Mackinac, 440 to St. Joseph, 580 to Algonac, 800 to Kingston, 660 to Livingston, 400 to Owen Sound, 450 to Depere, 300 to St. Clair, 400 to Osceola, 410 to Pequaning, 300 to Au Sable, 300 to Sault Ste. Marie, 250 to Put in Bay.

Lake freights ruled steady since my last letter until Tuesday; shipments not heavy, partly on account of scarcity of vessels, and partly from short supply of coal. Yesterday and to-day unsettled feeling: an advance was obtained to Lake Erie ports of 5c. per ton, while to Lake Superior ports a decline of 5c. took place. The going rates for the week were as follows: $1.25 to Chicago and Milwaukee, $1.35 to Sheboygan, $1.45 to Racine, 90@85c. to Superior and Duluth, $1.25 to Green Bay and Marquette, 35@40c. to Detroit, 40c. to Toledo and Windsor (Canada), 75c. to Saginaw, 90c. to Port Arthur, 50c. to Bay City, $1.15 to Menominee, $1 to Ashland, and 75c. to Port Dover, closing quiet.

A year since, on October 1st, lake freights on coal hence to Chicago and Milwaukee were $1, and in 1885 50c. per net ton.

Statistical.—Receipts of coal at this port by lake this year none. Receipts and shipments by railroad not reported, the companies officials declining to give the information. Shipments by lake westward for the month of September, 298,560 net tons, as compared with 227,800 tons in 1886, and 197,420 tons in 1885; for the season to October 1st, 1,382,080 net tons this year, 1,128,870 tons in 1886, and 1,069,880 tons in 1885. The receipts by canal for September, 20,706 net tons, and the shipments, 1394 tons. The receipts by canal for the season to October 1st, 46,930 net tons, as compared with 61,487 tons in 1886, and 111,852 tons in 1885; the shipments, 6702 net tons, as compared with 13,768 tons in 1886, and 21,697 tons in 1885. Canal freights nominal. No shipments reported or any inquiry for boats. The quoted rate to New York is $1.40 and to Albany $1 per net ton, captain to pay loading and unloading. Canal shipments for fourth week of September 802 net tons; the receipts, 6578 net tons.

Pittsburg. Oct. 6.

[From our Special Correspondent.]

Coal.—The market was firm but not very active. The mines of the various pools in the Monongahela are principally idle, there being but few empties to be loaded. The advance noted in our last in the Cincinnati market has been maintained. Sales Pittsburg afloat 11@12c. per bushel, delivered 14c. Price of coal in the pools:

PRICE OF COAL F.O.B.

First pool	$4.50	Third pool	$3.65
Second pool	4.25	Fourth pool	3.00

COKE AT OVENS, PER TON.

Blast-furnace	$2.00	Foundry	$2.60
Crushed	2.60		

The supply of cars is increasing. The wage question remains the same as at date of our last; there does not seem to be much danger of a strike. Its a bad business, and costs a heap of money.

FREIGHTS.

The latest actual charters to Oct. 6th, per ton of 2240 pounds:

From New York to:—Bath, Me, 80; Beverly, 85*; Boston, 80*; Bridgeport, 75; Cambridge, Mass., 80*3c; Cambridgeport, 80*3c.; Chelsea, 80*; Com. Pt., Mass., 80*; E. Boston, 80*; E. Cambridge, 80*3c.; Fall River, 80@85; New Bedford, 90; Newburyport, 95*; New Haven, 75; New London, 80; Newport, 80@85; Norwalk, Conn., 75; Portsmouth, N. H., 90*; Providence, 80@85*; Salem, 80*.

From Philadelphia to:—Alexandria, 85; Baltimore, 60§; Bangor, 1.00*; Beverly, 1.05*; Boston, 90@1.05; Cambridge, Mass., 95@1.05; Cambridgeport, 1.05*; Charleston, 75; Com. Pt., 95@1.05; E. Boston, 95@1.05*; E. Cambridge, 95@1.05*; Gardiner, Me., 1.05*; Georgetown, 85; Gloucester, 1.05*; Lynn, 1.05@1.25; Milton, 1.15*; Newark, 90§; New Bedford, 85; Newberne, 75; New York, 90§; Norfolk, Va., 55@60; Portland, 90@95*; Portsmouth, N. H., 1.00@1.05*; Portsmouth, Va., 60; Richmond, Va., 75; Saco, 1.20*; Salem, 90@1.05*; Savannah, 90; Washington, 85; Wilmington, 75.

From Baltimore to:—Bangor, 1.10; Bath, 1.10; Boston, 1.15; Bridgeport, 1.00; Bristol, 1.00; Brooklyn, 1.00; Charleston, 80@90; Fall River, 1.00; Galveston, 2.75; New Bedford, 1.00; Newburyport, 1.30; New Haven, 1.00; New London, 1.00; New York, 1.00; Portsmouth, N. H., 1.25; Providence, 1.00; Salem, 1.15; Savannah, 1.00@1.10; Somerset, 1.00; Williamsburg, N. Y., 90; Wilmington, 1.00.

* And discharging. † And discharging and towing. 3c. per bridge extra. § Alongside. ‡ And towing up and down. ¶ And towing. †† Pilotage. ** Below bridge. *** Old B. L.

MARKETS.

NEW YORK, Friday Evening, Oct. 7.

Prices of Silver per ounce troy.

Oct.	Sterling exchange	Lond'n Pence.	N. Y. Cents	Oct.	Sterling exchange	Lond'n Pence.	N. Y. Cent.
1	4.83½	44 7-16	96	5	4.84	44¼	96¼
3	4.83½	44 7-16	96	6	4.84	44¼	96¼
4	4.84	44½	96¼	7	4.84	44⅜	96

Considerable operations for the other side have taken place during the week, and the market closes rather weak.

Coinage at the United States Mints.—The total coinage of the United States mints during September was 8,757,045 pieces, of the value of $5,099,333. The total gold coinage was 196,165 pieces, of the value of $1,820,537, of which amount $1,680,160 were eagles. The silver coinage amounted to 4,110,160 pieces, of the value of $3,201,074, of which $3,100,000 were standard silver dollars and $101,004 were dimes. The minor coinage was 4,450,720 pieces, of the value of $77,721.60, of which $41,512 were 5-cent pieces and $36,202.40 were 1-cent pieces.

Foreign Bank Statements.—The governors of the Bank of England at their weekly meeting made no change in its rate for discount, and it remains at 4 per cent. During the week, the bank lost £467,000 bullion, and the proportion of its reserve to its liabilities was reduced from 43·76 to 38·64 per cent, against a decline from 41 to 33⅞ per cent in the same week of last year. On the 6th inst., the bank gained on balance £96,000 bullion. The weekly statement of the Bank of France shows a loss of 7,125,000 frs. gold and a loss of 825,000 frs. silver.

Copper.—This has again been a week of activity in the copper market, and there have been pretty large transactions in Lake copper. We are also informed that bids for considerable quantities for delivery spread over 4 or 5 months at full prices were recently submitted to producers, but as might have been anticipated, these bids have been declined. The time is drawing near when it is expected that the Calumet & Hecla Company will again come into the market, but it is not anticipated that they will dispose of the copper on this occasion at low rates. Prices here close as follows: Lake Copper, spot, 10·50; November, 10·60; December, 10·75; January, 10·90; February, 11.

The London market has also shown considerable buoyancy lately, and to-day's quotation for Chili Bars are £39 17s. 6d.@£40 cash, and £40 10s.@£40 12s. 6d. for three months forward. English Tough, £44; Best Selected, £45 5s.@£45 10s.; Strong Sheets, £50. According to cable advices the statistics for the second fortnight in September show a decrease again of 1600 tons, and the statistical position in Europe certainly favors an advance in prices.

From this country the exports of copper exhibit a remarkable diminution, as compared with the last two

years, and this fact strongly confirms what we have repeatedly pointed out during the last few months, that the home consumption has greatly increased. Bearing in mind the falling off in output of Calumet & Hecla and Quincy copper, the prospects for copper in the near future are decidedly promising.

The first shipment of matte from the mines of the Boston & Montana Consolidated Copper and Silver Mining Company, of Montana, equivalent to 100 tons of fin copper, has been made, and is now en route to New York. This will be followed by weekly shipments in a moderate way during the coming winter.

The exports of copper during the past week have been as follows :

To Liverpool:				
By S. S. Chester ...	1,600 matte.		187,630 lbs.	$9,500
" Adriatic	3,999	"	460 1 0 lbs.	25,000
" England..	10,798	"	1,028,580 lbs.	65,000
" France.....	54 bbls. copper		67,500 lbs.	6,750
To Antwerp:				
By S. S. Westernland.	55 casks copper		68,750 lbs.	7,090

Tin.—No change of a material nature has taken place in the condition of the market for this metal since last week, for although we have been constantly disturbed by the varying rumors from London, our prices have on the whole been fully maintained. The fight between the "bulls" and the "bears" for supremacy in the speculative operations by which tin is so unfortunately characterized, is of an interesting, not to say amusing, character for the disinterested onlookers, but must be the reverse of comforting to those who have any thing at stake.

It is very evident that the "bulls" have made enormous purchases, and will require a great deal of financial strength to maintain their position, and to take the quantities they have contracted for off the market as they fall due. If they do not fail in their efforts in this regard the "bears" will come in for a memorable "squeeze," for on their side they have largely oversold any thing that they are likely to be in a position to deliver. Which ever way the wind may happen to blow it can convey very little good to the small fry who dabble in speculative accounts with the hope of "coming out right side up," and we can only repeat the caution we gave last week—to be careful and watchful, in order to take advantage of any weakness that may arise from the "crack" that will undoubtedly, sooner or later, make itself heard from the other side.

During the month of September our importations amounted to 1450 tons, but despite this fact there is no fall in price, 23·35@23·40c. being freely paid for spot at store or dock, while 22·90@22¾c. are the ruling figures for December and January respectively. This vigorous tone is no doubt attributed to our heavy consumption, which has gone on steadily increasing and shows every sign of even further improvement. According to our latest advices from London, the closing prices at that market were £105 10s. for spot and £105 for futures, with a very brisk business, or an advance of ten shillings upon the top quotation of last week. The total visible supply in the principal centers of the world was stated on October 1st at 6201, to which must be added 5760 tons afloat, making a grand total of 11,871 tons in sight at the date named, as compared with 11,606 tons at the same time last year, and 15,025 tons in 1885. In tin plates the markets continue to be dull, and there is absolutely no business or movement to report. Our latest prices are the following :

Siemens-Martin steel charcoal finish.....	$4.75
" " " coke "	4.60
Ternes.....	4 30
Coke, ordinary.....	4 50

In Liverwool there is a tendency to weaken—the prices cabled being 13s. for coke, and 15s. 6d.@16s. for charcoal.

Lead.—The recent sharp decline in prices has induced consumers to come more freely into the market in order to replenish their stocks, and this and the firm holding of lead at the West has made a very firm market, and while the large New York buyers have not purchased freely, considerable lead has been shipped from here to adjacent points, so that in the aggregate 300 tons common for October have been placed at 4·40 and 4·45 cents per lb.

Buyers generally are inclined to be conservative, owing to the proximity of the foreign price, which is cabled £11 17s. 6d., or 4·62½ delivered New York. English is quoted £12 2s. 6d. to £12 5s.

Messrs. Everett & Post, of Chicago, telegraph as follows to-day: Early in the week prices advanced on a temporary flurry to 4·30. To-day market quiet and dull, with no buyers, at 4·25. Business in car-load lots only.

Spelter.—Another large advance is reported from Europe, and the quotations now are for ordinaries £15 7s. 6d., and for special brands. £15 10s. to £15 12s. 6d. In this market the quotation is 4·60@4·65c. for Domestic spelter and 5·10@5·15c. for Foreign.

Sheet Zinc is 6½@6¾c.

Antimony.—Remains very firm, with quotations Cookson's, 9¼c.; Hallet's, 8¾c.

There has been no change in Quicksilver, in Aluminum, or in Nickel during the week.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Oct. 7.

This has been a very dull week in the iron trade. Buyers appear to be very cautious and not anxious to obtain the supplies usually called for at this season. There is an evident disposition on the part of most sellers to hasten transactions, which is indicated by a very general lowering of prices. Although prices are undoubtedly lower all around, they are not to be considered as "weak," *i. e.*, subject to considerable modification when a *bona fide* buyer appears. There is no apparent diminution of the enormous consumption of all kinds of iron, and no great accumulation of stocks.

American pig-iron continues in good demand with not much foundry iron offered for early delivery. The scarcity of authracite in the Lehigh district is forcing some furnaces to take what coal they can get, and the result will doubtless be felt in the quality of iron produced. We note the sale of 2000 tons No. 2X Thomas iron at $19.50 at tidewater.

Scotch irons are all lower in price both here and in Scotland. The reduction on this side is partially due to more favorable freights. The report last week of a forced sale of 200 tons of Coltness iron at a low figure, about $20. is denied, and there is good reason to believe that no Coltness has been offered under $21.75. The mistake probably arose from the offering of a lot of Coltham iron at about the low figure quoted.

No new business is reported in Bessemer pig or spiegel, and quotations are not on the basis of actual business.

Prices of steel blooms, billets, slabs, and wire rods are also only nominal, as there is no new business in these articles.

We hear of no new sales of steel rails in any quantity. Inquiries continue, however. The Eastern mills now generally quote $35 at mill for heavy sections, irrespective of time of delivery. The opinion gains ground that the next year's demand for rails will not equal that of 1887, and that the American mills will be able to supply all the rails needed in the United States in 1888. The country can not continue indefinitely to furnish the enormous amount of money required to build 12,000 miles of railroads per annum. This is already felt in the difficulty which some roads have had in placing their bonds.

Old rails are decidedly lower in prices. A sale of about 2000 tons of Tees was made early in the week at $22.50, but no more buyers can be found at that figure.

The ruling quotations are as follows :

American Pig-Iron.—No. 1 X, $21@$21.50; No. 2 X, $18.50@$19.50; Forge, $17@$17.50, all at tidewater.

Scotch Pig.—Coltness, $21.75@$22.00; Clyde and Dalmellington, $20@$20.25; Summerlee, $21.75@$22; Gartsherrie, $21; Shotts, $21@$21.25.

Cables to the Metal Exchange to-day quote Warrants, 40s. 10d.

Coltness, 52s. 6d.; Langloan, 48s 6d.; Summerlee, 50s. 6d.; Gartsherrie, 47s.; Glengarnock, 48s. 6d.; Dalmellington, 43s. 6d.; Eglinton, 42s. 9d.

Bessemer Pig.—Foreign, nominally $20.25; Domestic, about $19.50 at Eastern furnaces.

Spiegeleisen.—English 20 per cent, $27@$27.50; German, $26.25@$26.50; 30 per cent, $31.50@$32; Ferro, $58@$58.50.

Steel Blooms.—$30.50@$31, nominally.

Steel Billets.—$30.50@31, nominally.

Steel Nail Slabs.—$31.

Steel Wire Rods.—$40.50@$41. for prompt delivery; $40.50 for shipment.

Steel Rails.—Heavy sections, $35@$36 at mill, according to size of order and time of delivery. Light sections, $37.50@$42 at mill.

Structural Iron and Steel.—At mill: Bridge Plate, 2¼c.: Angles, 2·3@2·6c.; Tees, 2·6@2·8c., Steel Angles, 2·6@2·75c. From dock, Beams and Channels, 3·3c., base.

Steel Plates.—On wharf: Tank and Ship, 2·85@3c.; Boiler Shell, 3@3¼c.; Boiler Flange, 3⅛@3⅜c.; Boiler Fire-Box, 4@4½c.

Merchant Steel.—American Tool Steel, 7½@10c.; special grades 10@20c.; Crucible Machinery Steel, 4½@6c.; Bessemer Machinery and Spring, 2·7@3c.; Bessemer Cutlery, 3·2c.

Plate Iron.—Common Tank, 2·4@2·5c.; Refined, 2·5@2·6c.; Boiler Shell, 2·7@2·8c.; Boiler Flange, 2·7@3·8c.; Extra Flange, 4¼@4½c.

Bar Iron.—For Refined, 2@2·1c., base at wharf; Common, 1·9@2c., base at wharf.

Cast-Iron Pipe.—$32@$38, according to size.

Rail Fastenings.—Spikes, 2·3@2·4c., delivered; Angle Fish-Bars, 2·15@2·2c.; Bolts and Square Nuts, 2·9@3c.; Bolts and Hexagonal Nuts, 3·1@3·2c.

Wrought Scrap Iron.—Foreign, ex ship, $20.50@$21; No. 1 yard scrap, $21.50@$22.

Cast Scrap Iron.—$17@$17.50.

Old Car Wheels.—$19@$19.50.

Old Rails.—Tees, $22@$22.25; Double Heads, $22.50@$23.

Nails.—$2.05@$2.10 in car-load lots.

Louisville. Oct. 4.

[Reported by GEO. H. HULL & Co.]

Sales at Louisville during past week have decreased somewhat. Stocks at furnaces still low, furnaces making choice brands being sold ahead, and some of them out of blast for repairs or lack of coke, and a number of important orders not booked. Furnaces unable to fill. Prices substantially unchanged.

We quote for cash in round lots as follows :

PIG-IRON.

Southern Coke, No. 1 Foundry.....	$20.50@$21.00
" " No. 2 "	19 50@ 20 00
" " No. 2½ "	19.00@ 19.50
Hanging Rock Coke, No. 1 Foundry	21.00@ 21.50
" " Charcoal, No. 1 Foundry...	24.00@ 25.00
Southern Charcoal, No. 1 Foundry.... ...	21 00@ 22.00
Silver Gray, different grades	18.00@ 19.50
Southern Coke, No. 1 Mill, Neutral.....	17 75@ 18.25
" " No. 2 " "	17.00@ 18.00
" " No. 1 Mill, Cold Short...	17.00@ 18.00
" Charcoal, No. 1 Mill	18.00@ 19 00
White and Mottled, different grades	15 50@ 16 00
Southern Car-Wheel, Standard Brands....	25 00@ 26 00
" " Other "	22.00@ 24.00
Hanging Rock, Cold-Blast.....	25.50@ 26 50
" " Warm-Blast..	22.00@ 23.00

Philadelphia. Oct. 6.

[From our Special Correspondent.]

It is only within a few days that any intimation of what would be called a depression in the iron trade has been manifested. On Monday some of the brokers predicted an active week on account of having closed a few good orders that had been pending for some time, mostly for forge iron; since those transactions, nothing of importance has been terminated. Foundry and mill men are not inclined just now to make extensive purchases, in fact are not in need of either large or small lots. They affect to say what the depression will amount to and assert that a slight decline in price will result. The market is dull so far as crude iron is concerned, but as yet no instances have come to light either in the better or poorer brands. The brokers and agents have not made any propositions to attract buyers and decline to say whether a concession of twenty-five or fifty cents a ton is likely to be made; nothing else will induce business just at this time. The months of August and September were quite active, exceptionally so; the dullness of October is a natural consequence, although it was not anticipated. The consumption of both foundry and forge iron is very heavy; the production is at its maximum limit. The supply of coke is abundant, but the supply of coal will shortly fall off. The strike in the Lehigh Valley just now promises to be a prolonged one, and the miners are depopulating that region and seeking employment in the Schuylkill Valley and other regions. The effect of this will be that the actual deficiency of coal will be trifling, possibly no more than 25,000 tons per week. The receipts of coke are heavy, and the pig-iron interests are protected by contracts. We have no new information from the Connellsville region. Prices of pig-Iron are firm at appended rates. In foreign material nothing of importance has been done, and the most active importers have very little to say. It is known that a concession of about fifty cents on plates, bolts, and slabs would bring in a good many orders, but consumers prefer to let things go along as they are for a few weeks before buying; in the meantime they anticipate a weakening in the foreign market. Muck bars are rather dull to-day, although a good business has been dull all along. The demand for manufactured iron this week is not as active as last, and consumers are pretty well supplied for the present; the mills, however, have business sufficient to keep them running right straight along, and there will be no visible effects of the moderated demand. Tee plate and tank iron markets report a steady influx of small orders. One or two big specifications are in hand and bids will be made by Saturday. There is a disposition to shade slightly for a large order; prices are very firm. The sheet-iron markets have had a good week's business and are taking orders steadily. Their active season began a little later, and they are now enjoying what seems to be a good strong demand at card rates for small lots. All of the merchant steel manufacturers are busy, with an abundance of business in sight at full prices. Skelp iron is quiet at 2@2·05c. The wrought-iron pipe makers have booked business equal to two weeks' work since Monday. The nail makers have nothing to do, and quote prices firm for good nails. The offerings of inferior nails are not interfering as much as a month ago. Building operatings are being pushed rapidly, but consumers are not buying in a large way. In structural iron nothing new has been done; mills are busy; prices firm. In steel rails quotations are $36, with mostly small orders coming in for early winter delivery. Old rails are quoted at $22.50, with $22 offered. Buyers and sellers can not come together, and as stocks are fair at mills, there is no urgency. Three or four large lots are on the way, and the supply promises to be sufficient for the demand; prices will remain a little weak. The scrap iron market is without notable change. Selected sells very well, but at about fifty cents below last week's quotations. The general situation of the iron trade is good, and the present conservative action is indicative of strength and confidence rather than weakness. The heavy consumption guarantees a busy winter at fair prices. All of the mills in the interior are crowded with work.

	$	$		$	$
Foundry No. 1	21.00@	22.00	Muck-Bars.....	31.00@	31.50
Foundry No. 2	18.50@	19 50	Merchant Iron..	2@	2·10c.
Gray Forge....	17.00@	17.50	Plate Iron.....	2.30@	2.50
Bessemer Pig..	20.50@	21.00	Tank Iron.....	2 40@	2.50
Foreign material:			Skelp Iron....	1.95@	2.00
Steel Rail Bl'ms.....	@31.50		*Structural iron:*		
Foreign Bess'r.	20.50@.....		Angles	2.30@.. ...	
Spiegeleisen.	27.00@	27.50	B'ms and Chan.	3 30@.....	
Scrap, Selected	23.50@.....		Nails	2.10@	2 25
No. 1	21.00@	22.00	Steel Rails.	36.00@	38.00
Cargo Scrap...	22.00@.....		Old Rails.....	23.50@	24.50

Pittsburg Oct. 6.

[From our Special Correspondent.]

The demand for iron was less active than for some weeks past, with a falling off in the volume of trade. Buyers are not so anxious to invest unless prices are shaded. This has been the case on certain kinds of iron. Tuesday was the parade day of the Grand Army. Business of all kinds was neglected, and the iron trade did not escape. While the raw iron market can not be called active, so far as relates to new business, it might very properly be called inactive. For city furnaces and favorite brands, holders are not disposed to make concessions. The only sales made were at rates current at date of last report. There is, however, a falling off in the demand. The sales don't show up in size as formerly. We hear of several lots of iron from other points being offered a shade below last week's prices. The parties have the matter under consideration. When there is a pressure to sell buyers are pretty certain to take advantage of the same. That, however, is the way of the world.

Another serious drawback in the iron trade is the everlasting strikes. It seems to be quite popular. When one party gets matters arranged, then look out for another at some other point. The strike just inaugurated at the Soho mills of Morehead, McClure & Co. is simply a quarrel between the Amalgamated Association and the Knights of Labor. The company has nothing to do with it, yet its works must remain idle until these factions choose to kiss and make up. The coke question remains the same as last week. While the leaders are talking strike the men seem to have had enough of that kind of medicine; the fact is the coke business is leaving the Connellsville regions. Coke consumers are going to make their own coke.

Coke or bituminous:	$	$		$	$
Foundry No 1	20.50@21 00		Steel Blooms	32.00@32.50	
Foundry No. 2	19.25@19,50		Steel Slabs	31.00@32.00	
Gray F., No. 3	18.00@18.25		Steel Crop Ends	@22.00	
" " No. 4	17.75@18.00		St'l Bl'm Ends	@21.50	
White	17 50@17.75		Steel Billets	31.50@3[illegible].00	
Mottled	17.50@ 7.75		Old Iron Rails	25.50@26 00	
Silvery	19 0[illegible] @19.50		Old Steel Rails	23.50@24.50	
Bessemer	21.00@21.25		No. 1 W. Scrap	21 00@21.55	
Charcoal:			No. 2 W. Scrap	@20 00	
Foundry No. 1	25.00@25.75		Steel Rails	37.00@38.00	
Foundry No. 2	24.00@24.75		" light sect's	40.00@42 00	
Cold-Blast	26.00@30.00		Bar Iron, nom.	1.90@ 2.00	
Warm-Blast	25.00@27.00		Nails $2 net car lots.		
20 p. c. Spiegel	29 00@		Steel Nails $2 net car lots.		
Muck-Bar	31.25@31.50		Two per cent off for cash.		

SALES SINCE OUR LAST REPORT.

Coal and Coke Smelted Lake Ore.

500 Tons Standard Bessemer	21 00 cash.
500 Tons Standard Bessemer	21.50 4 mo.
650 Tons Gray Forge	18 00 cash.
500 Tons Gray Forge	18.00 cash.
500 Tons Gray Forge, Storage	17.00 cash.

Coke Native Ore.

500 Tons Gray Forge	18.00 cash.
250 Tons Gray Forge	17.75 cash.
50 Tons Iosa Gray	17 50 4 mo.
50 Tons Silvery Foundry	20.00 cash.
20 Tons No. 1 Foundry	21.00 4 mo.
20 Tons No 2 Foundry	19.50 cash.

Charcoal.

100 Tons No. 2 Foundry	25.00 cash.

Steel Billets.

500 Tons Nail Slabs	31.50 cash.
500 Tons Billets	32.50 cash.

Muck Bar.

500 Tons Good Neutral	31.50 cash.

Steel Wire Rods.

400 Tons Imported on Wharf Baltimore	41.25 cash.

Steel Rail Ends.

150 Tons American	21.75 cash.

The National Association of Tube and Pipe Manufacturers, at a meeting in Pittsburg on the 5th inst., advanced prices 15 per cent over last month's schedule and adjourned without transacting any other business of importance. The attendance of the trade was large and representative.

FINANCIAL.

NEW YORK, Friday Evening, Oct. 7.

The Condition of Trade.

The distribution of general merchandise is of smaller volume this week than last, taking the country over. The mild weather at various points is responsible for this, affecting the interior demand for winter goods. The state of mercantile collections is only fair at best, but an improvement is looked for in this direction at an early date. The farmers at the Northwest are hurrying wheat to market, or to interior elevator, which is practically the same thing, in excess of previous records during the current season, but the totals recorded as received at interior points, thus far, since July 1st, continue less than during the like period in 1886. Shipments from interior points to seaboard, however, have been full. And by these facts may be gauged to a certain extent the resultant benefit to railways carrying the grain. The light stocks of Indian corn throughout the country as compared with a year ago, about one-half the quantity, points to a reduced tounage in that direction. And, so far as railway freight is concerned, it must be borne in mind that shipments of dry-goods, grceeries, hardware and other staples, in the aggregate, do not fully equal the record of one year ago. The decline in earnings of the St. Paul Railway during September would be quite significant at this time, except that the book-keeping methods of that corporation are so often called in question, and owing to the further fact that the receipts of that line are somewhat in contrast with earnings of railways traversing contiguous territory.

The iron industry presents no signs of radical improvement. Pig-iron is firmly held at most points, but the demand, aside from Pittsburg and Cincinnati, is somewhat smaller than during the previous month, which emphasizes the alleged relative weakness of the industry, inasmuch as the present is one of the months in which an increasing request is generally the rule. Steel rails are, perhaps, the weakest feature, for the report is widespread that not only have but little more than one half of the 1887 deliveries been made, but there is a possibility that some orders for delivery prior to January 1st, 1888, may be cancelled. While there are contradictions of the rumors that rail requirements for 1888 are likely to fall behind those for 1887, there are also several fair reasons for regarding them as entirely probable, particularly inasmuch as a number of railway companies are contemplating restricting extensions recently arranged for. The continuation of the strike of Lehigh coal miners is unfortunately unrelieved by any prospect of near-by settlement. How soon this may serve to check the output of anthracite iron, or affect prices thereof, can not be stated—but it is a factor of considerable importance.

The anthracite coal trade continues very active, owing to the reduced supply, with urgent calls, East, West and South for prompt shipments. One result of the strike is to greatly improve the deliveries and therefore the cash receipts of the Reading Company, which organization reports itself unable to take any more orders for October delivery. Bituminous coal is also strengthened, but no advances have been announced.

The general financial situation is somewhat improved. Call loan rates at New York are much easier, and discounts of prime commercial paper, while nominally easier, are not given by the banks with quite the freedom desired. Rates on call are quoted at 4@5 per cent, and discounts are nominally 7@8 per cent, with a few as low as 6 per cent. The improvement is due mainly to the disbursement by the treasury of about three quarters of the sum total offered for 4 and for 4½ per cent bonds under the late circular of the President, backed by receipts of some $400,000 in gold from abroad, and the gain of about $3,000,000 of surplus reserves by the New York banks.

The Coal Stocks.

Speculation in railway shares has not been active, except in less than half a dozen of the more conspicuous, notably Reading and St. Paul. The former has come to the front owing to the difficulty in arranging to prevent a foreclosure which seemed to hinge upon the securing enough of the first 5's to prevent that result. The surrender of a small party of these bondholders to the Corbin party within the week gives the latter a controlling interest, and points to the reorganization of the property as originally outlined, instead of to foreclosure. The price of Reading, which had declined, has advanced since in consequence. The only other feature of the market was the acquiring of the Baltimore & Ohio Telegraph by the Western Union Telegraph Company, which has excited wide attention. The range of prices (bid at the close) of leading coal road properties has been as follows.

The attack on Lackawanna was also a feature and that stock was depressed by heavy sales. London Exchange at the close was $4.84@$4.84½.

	Sept 30.	Oct. 5.	Oct. 7.
Col. Coal & Iron	36¼	36¼	†35
Col. & H. V. C. & I.	27	22	†24
Del. & Hudson	99½	98½	98¼
Del., Lack & W.	129¾	126¼	125¾
N. J. Central	73½	72	72
N. Y., Susq & West'n	9	9	9¼
Reading A. P	60⅞	59½	60⅝

* Ex div. † Thursday's close.

Mining Stocks.

The mining stock market has been extremely dull during the week, and though the industry itself was never more prosperous, and the mining companies reporting to us have already declared an average of about one million dollars a month this year, yet there appears to be little inclination among the general public to speculate in mining stocks.

Several of the prominent stocks are now very low and we confidently expect to see an early advance, while the bubbles have mostly been pricked and are disappearing.

Some startling developments on the Stock Exchange in regard to certain mining stocks are promised and will be duly recorded.

We notice elsewhere the great record by the Montana Limited, which has so excited the London market as to start the mining boom which has continued there during a good portion of this year.

The old Consolidated California & Virginia, coming with nearly $1,000,000 of dividends, shows that the great lode, even from its upper levels, can yet produce largely. We greatly fear it is nearly the final flicker of the expiring flame, though this company may continue dividends for some time yet.

In view of the uncertainty in the public mind in reference to the financial condition of the San Sebastian Gold Mining Company, whose stock has been added to the regular list of the Consolidated Exchange, the Committee on Mining Securities has issued an explanatory circular setting forth the fact that on June 11th there was outstanding bonds to the amount of $50,000, deferred payment on the mine amounting to $40,000, and loans due stockholders, $49,000. The announcement is also made that since the statement was filed in June last, the company's officers report that they have decreased the amount of deferred payment on mine $29,600, and since that date they have received bullion to the amount of $37,998. The stock will soon be called.

Copies of the ENGINEERING AND MINING JOURNAL of the 1st inst. were freely distributed on the floor of the Consolidated Exchange on the morning of that day, and there was much eagerness to peruse what we had to say regarding the Tortilita bubble. Our comments on this contemptible scheme to enlist the unwary were universally approved, and the only strictures that have been brought to our attention were to the effect that we failed to denounce the swindle in terms still more incisive. There are no evidences that the promoters of this gigantic fraud have any intention of having their stock called on the Consolidated Exchange. Victims who were entrapped into the meshes of the Great Tortilita have, during the past week, been attempting to dispose of stock through "ads." in the daily papers, one unfortunate offering to sell out at $1.50 a share. If these shares should command over 25 cents a share when traded in on the Exchange public expectation will be greatly mistaken.

Silver King has again appeared on the list, selling as low as $5 50. The recent decline in the price of this stock is no doubt due to the passing of dividends.

Surinam continues to show activity and is firm at prices ranging from $3.35@$3.50.

A dispatch from Salt Lake City says that "at the meeting of stockholders of the Horn-Silver Mining Company, at Frisco, Utah, on Tuesday, Washington and Simonds, who came, as supposed, to make a fight against Francklyn and Brown, united forces with them and perpetuated the old management."

Since we had urged stockholders to send their proxies to Messrs. Washington and Simonds in the expectation that they would secure the information needed concerning the stockholders' affairs and protect their interests, we wrote these gentlemen for information, and have great pleasure in publishing the following answer, which we believe will prove satisfactory to the stockholders:

"TO THE EDITOR OF THE ENGINEERING AND MINING JOURNAL:

"SIR: In reply to your letter of October 7th, I would say that the only positive information that I have of the Horn Silver election is a telegram from Mr. Simonds, which reads as follows:

"'CLEAR CREEK, Utah, Oct. 5, 1887.

"'*B. M. Whitlock*, 49 *Wall street, N Y.*

"'Compromise. Washington, you and one resident elected on our side. SIMONDS.'

"I feel very confident that Mr. Simonds has not consented to any compromise which will prevent our obtaining the information to obtain which we have been retained by the English stockholders. I have assured my clients in England that I will use every means of obtaining an examination of the accounts of the Horn Silver Company and a reliable report of the condition of the mine. If in my position as director, I am unable to obtain this information by reason of my being in a minority on the board, I shall, of course, resort to the same measures which I should have been compelled to take if I had not been elected at all. I certainly shall be in no way hampered in obtaining this information, by my position as director.

"'You ask for the inside history of the fight, and the cause of the enemies combining their forces.' I know nothing more than I have told you above. I shall be glad to give you for publication whatever further information I receive from Mr. Simonds by letter. In the meanwhile I must beg you, and through you the stockholders who have given their proxies to our side to believe that Messrs. Washington and Simonds have acted according to their best judgement in the premises.

"Yours truly, BACHE MCE. WHITLOCK.

"No. 49 WALL STREET, Oct. 7, 1887."

There is nothing of importance doing in the stock which has been selling at from 81c. to 90c.

Ontario remains unchanged at from $27@$27.50.

An attachment against the property in this State Thomas B. & S. S. Valentine and John S. Finch, all of San Francisco, was obtained on the 6th inst. by Julius Leszynsky from Justice Donohue, of the Supreme Court, in a suit to recover $28,500 as commissions for selling the capital stock of the Hector Gold Company, amounting to $300,000, to George W. Ballou, for $75,000. The stock has attracted but little attention, and sales were only recorded in the beginning of the week at prices ranging from 65c. to 90c.

The price of Brunswick ruled all week at $1.60; only one sale is reported at $1.50. Middle Bar declined from 48c. to 40c. Amador was in sympathy with its twin brother, and went from $1 55 to $1.35.

Plymouth Consolidated has again advanced to $21. Quicksilver Preferred shows a sale of 200 shares at $25 per share. The Bodies were neglected. Bodie Consolidated declined from $1.95@$1.75. Bulwer ruled at $1. Taylor Plumas is about as low as it can go, selling at from 1@2c. Gold Stripe at 5c., and Green Mountain at 14c.

Cashier, which has been the only active and interesting stock during the last few weeks, has been quiet, showing sales of 9100 shares against 68,710 shares the preceding week. In the beginning of the week the price advanced from 59c. to 65c., and toward the close declined to 55c. Monitor has again shown considerable activity and a declining tendency, going from 20 to 15c. Silver Cliff sold at from 9 to 8c. Security is still going lower, the last price given being $1. Lacrosse remains at from 10 to 12c. Little Chief at from 25 to 27c. Leadville at from 42 to 44c. Another dividend of $100,000 has been declared by the Iron Silver Mining Company, the stock of which is quoted at $3.

Santiago, which has been dormant for many weeks, appeared on the list on Monday with a sale at $3.35.

The promised boom of Castle Creek has so far not yet made its appearance. Only one sale was made this week at 11c. Holyoke was more active at from 12 to 9c.

Iron Hill has attracted considerable attention owing to the favorable reports from the mines and the resumption of dividends. The price has advanced to $3.40. Deadwood Terra holds its own at from $2.95 to $3. Homestake was a little higher this week, selling at from $13 to $14. Caledonia shows a sale of 300 shares at $1.50.

Nothing of interest can be reported about El Cristo The stock is quiet and is selling at from $2.30 to $2.50.

Mr. Theodore Sutro will shortly publish an exhaustive report relating to the property of the Sutro Tunnel Company, and shareholders are requested to send their address to Mr. Horace H. Thayer, Assistant Secretary of this company, Room 123, Produce Exchange. The stock has been quiet and firm, at from 34 to 37 cents, with sales of 29,400 shares. The Consolidated California & Virginia opened at $18.50, and declined to $17.50 on Tuesday, and on Thursday it advanced again to $19.25. Reports from the mine continue to be favorable. One sale of Yellow Jacket is reported at $5.50. Savage

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and amount of last.			Dividends. Total paid.	Dividends. Date and amount of last.		
1	Adams, S. L.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan	1887	.15
2	Alice, S. C.	Mont	10,000,000	400,000	25	*				750,000	Sept	1886	.06¼
3	Alturas, G	Idah.	1,500 000	3 00,000	5					95,000	Sept	1886	.50
4	Amie Con., S. L.	Colo.	5,000,000	500,000	10	*				330,000	Oct.	1883	.05
5	Amy & Silversmith, S.	Mon.		341,419						247,530	Aug	1887	.12½
6	Atlantic, C.	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	360,000	Jan.	1887	$1.00
7	Argenta, S	Nev..	10,000,000	100,000	100	295,000	July	1885	.10	40,000	Feb.	1880	20
8	Aurora, I.	Mich	1 000,000	40,000	25					155,000	Oct	1887	1.87½
9	Bassick, G. S.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1881	1.00
10	Belle Isle, S.	Nev..	10,000,000	100,000	100	160,000	Feb	1887	.20	300,000	Dec.	1879	.25
11	Belcher, G. S.	Nev..	10,400,000	104,000	100	2,269,335	Sept	1887	.50	15,397,000	Apl.	1876	1.00
12	Bellevue Idaho, S. L.	Idah.	1,250,000	125,000	10	26,250	Dec.	1883	10	200,000	Jan	1887	.10
13	Big B'nd Hydraulic, G	Dak..	1,000,000	200,000	5	*				258,000	Aug	1887	.03
14	Black Bear, G.	Cal..	3,000,000	30,000	100	22,500	Dec.	1884	.25	895,000	May	1883	.20
15	Bodie Con., G. S.	Cal..	10,000,000	100,000	100	424,990	Aug	1887	.50	1,602,572	Apl.	1885	.50
16	Bonanza Developm't	C & M	3,000,000	300,000	10					135,000	Oct.	1882	.15
17	Bonanza K'g, Cons. S.	Cal..	1,000,000	100,000	10	*				185,000	Feb.	1885	.10
18	Boston & Mont, G.	Mont	2,500,000	250,000	10	*				525,000	Jun.	1886	.15
19	Breece, S.	Colo.	5,000,000	200,000	25	*				2,000	Feb.	1880	.01
20	Brooklyn Lead, L. S.	Utah	500,000	50,000	10					127,000	July	1887	.05
21	Bulwer, G.	Cal	10,000,000	100,000	10	60,000	July	1887	.20	175,000	Jan.	1884	.10
22	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	40,000	Feb.	1886	.10
23	Calumet & Hecla, C.	Mich	2,500,000	100,000	25	1,200,000				29,350,000	July	1887	5.00
24	Carbonate Hill, S. L.	Colo.	2,000,000	200,000	10	*				80,000	Apl.	1884	.05
25	Caribou Con., S.	Colo.	1,500,000	150,000	10	*				50,000	Mch	1880	.10
26	Castle Creek, G.	Idah.	100,000	100,000	1					51,000	Oct..	1883	.03
27	Catalpa, S. L.	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
28	Central, C.	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,820,000	Feb.	1887	2.00
29	Christy, S.	Utah	10,000,000	100,000	100					10,000	Jun.	1885	.10
30	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec.	1884	.25
31	Colorado Central, S. L	Colo.	2,750,000	275,000	10	*				227,625	Oct.	1887	.05
32	Cons. Cal. & Va., G. S.	Nev..	21,600,000	216,000	100	108,000	Jan.	1885	.20	1,144,000	Oct.	1887	.50
33	Con. Gold Mining, G.	Ga..	500,000	100,000	5	*				108,000	Nov.	1883	.02
34	Contention, S.	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
35	Crescent, S. L. G.	Utah	15,000,000	600,000	25	‡				210,000	Aug.	1886	.05
36	Crown Point, G. S.	Nev..	10,000,000	100,000	100	2,675,000	Feb.	1882	.25	11,588,000	Jan.	1875	2.00
37	Daly, S. L.	Utah	3,000,000	150,000	20					300,000	Sept	1887	.50
38	Deadwood-Terra, G.	Dak..	5,000,000	200,000	25	*				§960,000	Sept	1887	.10
39	Derbec B. Grav., G. S.	Cal..	10,000,000	100,000	100	90,000	Dec.	1881	.10	180,000	May	1887	.10
40	Dunkin, S. L.	Colo.	5,000,000	200 000	25	*				250,000	Oct.	1887	.10
41	Elkhorn, G. S.	Mont	1,000,000	100,000	10	50,000	July	1883	.50	180,000	July	1887	.05
42	Empire Lt., G.	Mont	500,000	100,000	5					33,000	Mar	1887	
43	Eureka Con., G. S. L.	Nev..	5,000,000	50,000	100	500,000	July	1886	1.00	4,842,500	Oct.	1887	.25
44	Evening Star, S. L.	Colo.	500,000	30,000	10	*				1,400,000	Nov	1883	.50
45	Excelsior, G.	Cal..	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1880	.25
46	Father de Smet, G.	Dak..	10,000,000	100 000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
47	Franklin, C.	Mich	1,000,000	40,000	25	220,000	Jun.	1871		560,000	Dec.	1886	1.00
48	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
49	Fresno Enterprise, G	Cal..	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
50	Garfield Lt., G. S	Nev.	500,000	100,000	5					25,000	Mar.	1885	.12½
51	Gould & Curry, G. S.	Nev..	10,800,000	108,000	100	4,159,490	Jun.	1887	.50	3,826,000	Oct.	1870	10.00
52	Grand Central, S.	Ariz.	1,000,000	100,000	10					625,000	Dec.	1882	.25
53	Grand Prize, S.	Nev..	10,000,000	100,000	100	570,000	Apl.	1886	.50	495,000	Mar.	1884	.25
54	Granite, S.	Colo.	125,000	125,000	1					6,250	May	1883	.01
55	Granite Mountain, S.	Mont	10,000,000	400,000	25					3,200,000	Oct.	1887	.50
56	Green Mountain, G.	Cal..	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
57	Hale & Norcross, G. S	Nev..	11,200,000	112,000	100	5,036,800	July	1887	.50	1,598,000	Apl.	1871	5.00
58	Hall-Anderson, G.	N. S..	150,000	150,000	1					7,000	Jan.	1882	.05
59	Hecla Con., S. & L. C.	Mont	1,500,000	30,000	50					1,047,000	Aug	1886	.50
60	Hel'a Mg & Red, G. S. L.	Mont	3,315,000	663,000	5					197,97	July	1886	.06
61	Holmes, S.	Nev..	10,000,000	100,000	100	300,000	Sept	1885	10	75,000	Apl.	1886	.25
62	Holyoke, G.	Idah.	200,000	200,000	1					27 000	Feb.	1883	.10
63	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	3,918,750	Sept	1887	.20
64	Homerine, S. L.	Utah	5,000,000	250,000	20	25,000	Jun.	1883		123,000	Sept	1887	.05
65	Hope, S.	Mont	1,000,000	100,000	10	*				183,252	Oct..	1887	.25
66	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*				4,000,000	Nov.	1884	.50
67	Idaho, G.	Cal..	310,000	3,100	100					4,539,500	Apl.	1887	5.00
68	Ideal, S. L.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
69	Illinois, S.	N. M.	100,000	100,000	1	*				23,000	Jan	1887	.25
70	Independence, S.	Nev..	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
71	Indian Queen, S.	Nev..	250,000	125,000	2					368,750	July	1883	.03
72	Invo, G.	Cal..	500,000	100,000	5					45,000	Apl.	1882	.05
73	Iron Hill, S.	Dak.	2,500,000	250,000	10	82,500	Oct.	1885		125,000	Sept	1887	.05
74	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20	*				2,100,000	Oct.	1887	.20
75	Jackson, G. S.	Nev.	5,000,000	50,000	100	10,000	Nov	1880	.20	45,000	Oct.	1886	.10
76	Jocuistita, S.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885	.50
77	Jumbo, G.	Colo.	2,000,000	200,000	10					15,000	Jun.	1887	.02½
78	Kentuck	Nev..	3,000,000	30,000	100	342,000	Nov	1881	.30	1,800,000	Dec.	1886	.10
79	La Plata, S. L.	Colo.	2,000,000	200,000	10	*				610,000	Sept	1882	.30
80	Leadville Cons., S. L. L.	Colo.	4,000,000	400,000	10	*				430,000	Apl.	1887	.05
81	Lexington, G. S.	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	2.00
82	Little Chief, S. L.	Colo.	10,000,000	2 0,000	50	*				780,000	Mch	1885	.10
83	Little Pittsburg, S. L	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	50
84	Manhattan, S.	Nev	5,000,000	50,000	100	300,000	Jun.	1887	1.00	437,500	Feb	1886	.25
85	Marguerite, G.	Cal..	500,000	25,000	20					18,750	Oct.	1882	.25
86	Marion Bullion, G	N. C.	500,000							15,000	Jan.	1886	
87	Martin White, S.	Nev..	10,000,000	100,000	100	1,150,000	Mar.	1886	25	140,000	Dec.	1886	.25
88	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*				87,500	Sept	1887	5.00
89	Minnesota, C.	Mich	1,000,000	40,000	25	420,000	Apl.	1888	1 00	1,826,000	Mar.	1876	
90	Mono, G.	Colo.	5,000,000	50,000	100	610,000	Sept	1887	.50	12.500	Mar.	1887	.25
91	Montana, Lt., G. S.	Mont	3,300,000	330,000	10	*				1,247,400	July	1887	.75
92	Morning Star, S. L.	Colo.	1,000,000	100,000	10					725,000	July	1887	.25
93	Moulton, S. G.	Mont	2,000,000	400,000	5	*				350,000	May	1887	.07½
94	Mount Pleasant, G.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
95	Mt. Diablo, S.	Nev	5,000,000	50,000	100	137,500	Jun.	1880	2.00	80,000	July	1885	.20
96	Napa, Q	Cal..	700,000	100,000	7					290,000	Jan.	1883	.10
97	Navajo, G. S.	Nev..	10,000,000	100,000	100	45 ,000	Mar.	1887	.30	325,000	Feb.	1885	.25
98	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06½
99	New York Hill, G.	Cal..	5,000,000	50,000	100	62,500	Oct.	1885	.15	215,000	Aug.	1882	.10
00	Northern Belle, S.	Nev..	5,000,000	50,000	100	425,000	Jan.	1884	8.30	2,400,000	Apl.	1883	.50
101	North Belle Isle, S.	Nev..	10,000,000	100,000	100	250,000	Mar.	1887	.50	30,000	Aug.	1881	.15
102	Ontario, S. L.	Utah	15,000,000	150,000	100					8,600,000	Sept	1887	.50
103	Ophir, G. S.	Nev..	10,000,000	100,000	100	4,057,800	Aug	1887	.50	1,595,000	July	1882	1.00
104	Original, S. C.	Mont	1,500,000	60,000	25	*				126.000	Oct.	1887	.05
105	Osceola, C.	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,022,500	Jan.	1887	1 00
106	Oxford, G.	N. S.	125,000	125,000	1	*				38,500	Oct.	1885	.02
107	Paradise Valley, G. S	Nev.	10,000,000	100,000	100	47,000	Mar.	1882	.15	150,000	Apl.	1887	.10
108	Parrott, C.	Mont	1,800,000	180,000	10					36,000	July	1887	.10
109	Peacock, S. G. C.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886	
110	Pleasant Valley, G. S.	Cal..	10,000,000	100,000	100	10,000	Mar.	1884	.10	30,000	Dec.	1882	.05
111	Plutus, G. S. C. L.	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
112	Plymouth Con., G.	Cal..	5,000,000	100,000	50	*				2,120,000	Oct.	1887	.40
113	Prussian, S. L.	Colo.	1,500,000	150,000	10					132,000	Jan.	1883	.10
114	Quicksilver, pref., Q.	Cal..	4,300,000	43,000	100					914,150	Aug.	1887	1.50
115	" com., Q.	Cal..	5,700,000	57,000	100					151,000	July	1882	.40
116	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec.	1883		4,610,000	Aug.	1887	1.00
117	Richmond, S. L.	Nev..	1,350,000	54,000	25	*				4,312,587	Jun.	1887	1.25
118	Ridge, C.	Mich.	500,000	20,000	25	220,000	Mar	1886	.50	100,000	Feb.	1880	.50
119	Rising Sun, S.	Dak..	750,000	150,000	5	*				52,000	May	1881	.07½
120	Robinson Con., S. L.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
121	Robert E. Lee, S. L.	Colo	10,000,000	500,000	20					100,000	Dec.	1882	.5
122	Rooks, G.	Vt..	500,000	50,000	10	*				61,000	Apr	1885	.30
123	Savage, S.	Nev..	11,200,000	112,000	100	6,324,000	Sept	1887	.50	4,460,000	July	1869	3.00
124	Security L. Mg., Mfg.	Colo.	1,000,000	100,000	10	*				50,000	July	1884	
125	Shoshone, G.	Idah.	150,000	150,000	1					7,500	Apl.	1883	.01
126	Sierra Buttes, G.	Cal..	225.000	22,500	10					1,438,964	Oct.	1886	.37
127	Sierra Grande, S.	N. M.	2,500,000	500,000	5					860,000	Sept	1884	.25
128	Sierra Nevada, G. S.	Nev..	10,000,000	100,000	100	6,262,000	Aug.	1887	.25	102,000	Jan.	1871	1.00
129	Silver Cord, G. S. L.	Colo.	5,000,000	500,000	10					225,000	Nov.	1883	.25
130	Silver King, S.	Ariz.	10,000,000	100,000	100					2,000,000	July	1887	.25
131	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*				76,000	Nov	1886	.02
132	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*				2,962,500	Sept	1887	.20
133	Smuggler, S. L.	Colo.	600,000	60,000	10					66,700	Aug.	1883	.25
134	Socorro, C.	N. M.	250.000	2,500	100					4,000	Mch	1882	.00½
135	South Yuba, G.	Cal..	2,000,000	0 0,000	50	*				150,000	Oct.	1881	.75
136	Spring Valley, G.	Cal..	200,000	200 000	1	50,000	Oct.	1886	.25	50,000	Jan.	1881	.25
137	Standard, G. S.	Cal..	10 000,000	1 0,000	100	25,000	Oct.	1884	.25	4,425,000	Mar.	1884	.25
138	Stormont, S.	Utah	500,0 0	00,000	1	*				155,000	Nov.	1881	.05
139	St. Joseph, L.	Mo..	1,500,000	150,000	10	*				814,000	Sept	1887	.20
140	Surinam, G.	D. G.	3,000,000	60,000	5					45,000	Oct.	1887	.02½
141	Syndicate, G.	Cal..	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1885	.10
142	Tip Top, S.	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
143	Tombstone, G. S. L.	Ariz	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
144	United Verde, C.	Ariz.	3,000,000	300,000	10	*				97,500	Feb.	1884	.20
145	Valencia, M.	N. M.	150,000	1,500	100	*				37,500	Apl	1886	2.50
146	Viola Lt., S. L.	Idah.	750,000	150,000	5	*				74,500	May	1887	.12½
147	Vizina, S.	Ariz.	5,000,000	200,000	25	*				140,000	Apl.	1882	.10
148	Yankee Girl	Colo.	2,500,000	250,000	10	*				1,087,500	July	1887	.10
149	Yellow Jacket, G. S.		12,000,000	120,000	100	5,448 000	Dec	1885	.75	2,184,000	Aug.	1871	1.50

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Value.	Assessments. Total levied.	Assessments. Date & am'nt. of last.		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*			
2	Albion, S. L.	Nev..	15,000,000	150,000	100	$577,000	July	1883	.25
3	Allouez, C.	Mich	2,000,000	80,000	25	240,000	Feb	1884	
4	Alpha Con., G. S.	Nev..	3,000,000	30,000	100	460.000	Aug.	1887	.50
5	Alta, S.	Nev..	10,080,000	100,800	100	2,027,000	Feb	1887	.50
6	Amador, G.	Cal..	400,000	200,000	2	*			
7	American Flag, S.	Colo.	1,250,000	125,000	10	300,000	Jun	1877	.50
8	Anglo-Montana, Lt.	Mon.	600,000	120,000	5				
9	Appalachian, Lt., G.	N. C.	1,500,000	300,000	5				
10	Aspen Mg. & S., S. L.	Colo.	2,000,000	200,000	10				
11	Barcelona, G.	Nev..	5,000,000	200,000	25	*			
12	Bechtel Con., G.	Cal..	10,000,000	100,000	100	173,500	Jan.	1883	.10
13	Belmont, S.	Nev..	5,000,000	50,000	100	735,000	Apl.	1886	.10
14	Best & Belcher, G. S.	Nev..	10,080,000	100,800	100	1,900,590	Aug.	1887	.50
15	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*			
16	Bi-Metallic, S.	Mon.	5,000,000	200,000	25	*			
17	Black Jack, G.	Cal..	250,000	100,000	2½				
18	Boston Con., G.	Cal..	10,000,000	100,000	100	170,000	Nov	1883	.25
19	Bradshaw, S.	Ariz.	2,250,000	225,000	10				
20	Brunswick, G.	Cal..	2,000 000	400,000	5	*			
21	Bullion, G. S.	Nev..	10,000,000	100,000	100	5,059,000	Aug.	1887	.50
22	Bve and Bye	Ariz.	1,000,000	100,000	10	*			
23	Calaveras, G.	Cal..	500,000	500,000	1	*			
24	Carisa, G.	Wy.	500,000	100,000	5	*			
25	Cashier, G. S.	Colo.	500,000	250,000	2	*			
26	Cen Contin'l, G. S. L.	C. & A	2,000,000	200,000	10	*			
27	Charles Dickens, G. S.	Idah.	1,250,000	250,000	5	*			
28	Cherokee, G.	Cal..	1,500,000	150,000	10				
29	Chollar, S.	Nev..	11,200,000	112,000	100	1,152,000	Aug.	1887	.50
30	Cinnamon Mt., G. S.	Colo.	750,000	150,000	5				
31	Climax, S. L.	Colo.	2,000,000	200,000	10	*			
32	Colorado No. 2, S. L	Colo.	100,000	10,000	10				
33	Comstock, G. S.	Nev..	10,000,000	100,000	100	30,000	Mar.	1887	.15
34	Con. Imperial, G. S.	Nev..	50,000,000	500,000	100	1,175,000	Sept	1886	.15
35	Con. Pacific, G.	Cal..	6,000 000	63,000	100	189,000	Sept	1887	.2
36	Cons. Silver, S.	Mo..	2,500,000	250,000	10				
37	**Cop. Queen Cons, C.	Ariz	1,400 000	140,000	10				
38	Courtlandt	Colo.	500,000	50,000	10				
39	Crescent, S. L.	Colo.	3,000,000	300,000	10	*			
40	Crocker, S.	Ariz.	10,000,000	100,000	100	75,000	May	1887	.10
41	Crowell, G.	N. C.	500,000	500,000	1				
42	Dahlonega, G.	Ga..	250,000	250,000	1	*			
43	Dandy, S.	Colo.	5,000,000	500,000	10				
44	Dardanelles, G.	Cal..	1,000,000	100,000	10				
45	Decatur, S.	Colo.	1,500,000	300,000	5	*			
46	Denver City, S. L.	Colo.	5,000,000	500,000	10	*			
47	Denver Gold	Colo.	300,000	60,000	5				
48	Deseret, G. S.	Utah	500,000	50,000	10	*			
49	Dunderberg, S.	Colo.	1,500,000	150,000	10	*			
50	Durango, G.	Colo.	500,000	500,000	1	*			
51	Eastern Dev. Co., Lt.	N. S.	1,500,000	150 000	10	990,000	Mar.	1886	1.00
52	El Cristo, G. S.	U. S. C	1,000,000	500,000	2				
53	El Dorado, G.	Cal.	1,000,000	250,000	4	*			
54	Empire, S.	Utah	10,000,000	100,000	100				
55	Enterprise, S. L.	Colo.	800,000	80,000	10	*			
56	Eureka Tunnel, S. L.	Nev..	10,000,000	100,000	100	*			
57	Exchequer	Nev.	10,000,000	100,000	100	880,000	July	1887	.20
58	Found Treasure, S.	Nev..	10,500,000	100,000	100				
59	Gold Cup, S.	Colo.	500,000	500,000	1				
60	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
61	Gold Rock, G.	Cal.	1,000,000	500,000	2	*			
62	Goodshaw, G.	Cal..	10,000,000	100,000	100	*			
63	Grand Belt, C.	Tex.	12,000,000	120,000	100				
64	Grand Duke	Colo.	800,000	80,000	10				
65	Great Romance, G.	U. S. C	1,000,000	500,000	2	*			
66	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*			
67	Gregory Con., G.	Mon.	3,000,000	300,000	10				
68	Hariem M. & M. Co, G.	Cal..	1,000,000	200,000	5				
69	Head Cent. & Tr. S. G	Ariz.	10,000,000	100,000	100				
70	Hector, G.	Cal..	1,500,000	300,000	5				
71	Highland, C.	Mich	500,000	25,000	25				
72	Hortense, S.	Colo.	2,000,000	200,000	10				
73	Huron, C.	Mich	1,000,000	40,000	25	280,000	May	1887	3 00
74	Iron Gold & Silver, S.	N. M.	2,000,000	200,000	10				
75	Iroquois, C.	Mich	1,250,000	50,000	25				
76	J. D. Reymert	Ariz	10,000,000	100,000	100	*			
77	Julia Cons., G. S.	Nev..	11,000,000	110,000	100	1,452,000	Apl.	1887	.10
78	Kearsarge, C.	Mich	1 250,000	50,000	25	100,000	Apl.	1886	5.00
79	Laclede	N. M.	2,000,000	200,000	10				
80	Lacrosse, G.	Colo.	1 000,000	100,000	10	*			
81	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*			
82	Lucerne, S.	Colo.	5,000,000	500,000	10	*	Jan.	1885	.10
83	Mammoth Bar., G.	Cal..	10,000,000	100,000	100	50,000	Dec.	1881	
84	Mariposa pref., G.	Cal..	5,000,000	50,000	100	1,687,500	Feb.	1883	.25
85	" common, G.	Cal..	10,000,000	100,000	100	1,975,000	Dec.	1881	.20
86	May Belle, G.	Cal..	10,000,000	100,000	100	84,000	Mar.	1884	.15
87	Mayflower Gravel.	Cal..	1,000,000	100,000	10	235,000	Sept	1887	.25
88	Medora, G.	Dak.	250,000	250,000	1				
89	Mexican, S. S.	Nev..	10,000,000	100,000	100	2,615,960	July	1887	.25
90	Middle Bar G.	Cal..	400,000	200,000	2	*			
91	Mike & Starr, S. L.	Colo.	1,000,000	200,000	5	*			
92	Monitor, G.	Colo.	100,000	100,000	1	*			
93	Moose Silver, S.	Colo.	3,000,000	300,000	10	*			
94	Nachoochee, Lt., G.	Ga..	1,000,000	200,000	5				
95	Neath, G.	Colo.	1,000,000	100,000	10				
96	Nevada Queen, S.	Nev.	10,000,000	100,000	100	80,000	Mar	1887	.50
97	New Germany, G.	N. S.	100,000	100,000	1	*			
98	New Pittsburg, S. L.	Colo.	2,000,000	200,000	10	*			
99	North Standard, G.	Cal..	10,000,000	100,000	100	20,000	Nov		
100	Noonday	Cal..	600,000	60,000	10	208,000	Dec.	1881	.10
101	Oneida Chief, G.	Cal.	500,000	125,000	4	*			
102	Oriental	Nev..	2,000,000	200,000	10				
103	Oriental & Miller, S.	Nev..	10,000,000	400,000	25				
104	Overman, G. S.	Nev..	11,520,000	115,200	100	3,765,680	Aug.	1887	.25
105	Park, S.	Utah	2,000,000	200,000	10				
106	Peer, S.	Ariz.	10,000,000	100,000	100	135,000	Nov.	1886	.10
107	Peerless, S.	Ariz.	10,000,000	100,000	100	320,000	Sept	1887	.25
108	Phoenix	Ariz.	500,000	500,000	1				
109	Phoenix, G. S.	Ark.	5,000,000	200,000	25	*			
110	Phoenix Lead	Colo.	100,000	100,000	1	*			
111	Pilgrim, G.	Cal..	600,000	300,000	2	*			
112	Potosi	Nev..	11,200,000	112,000	100	1,201,600	Aug.	1887	.50
113	Princeton	Colo.	100,000	100,000

NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	Oct. 1. H.	Oct. 1. L.	Oct. 3. H.	Oct. 3. L.	Oct. 4. H.	Oct. 4. L.	Oct. 5. H.	Oct. 5. L.	Oct. 6. H.	Oct. 6. L.	Oct. 7. H.	Oct. 7. L.	Sales.
Alice, Mon	....	.....	.....	....	....	....	....	....	....	.....	...	.....	.....
Argenta, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bassick, Colo	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belcher, Nev	...	.....	.....	.....	.....	.....	.....	.....	6.13	.....	.....	.....	100
Belle Isle, Nev	....	.....	.....	.....	.....	.....	.80	.75	.85	.80	.....	.....	1,000
Bodie Cons., Cal	....	.....	1.95	1.80	.....	.....	1.75	....	.....	.....	.....	.....	900
Breece, Colo	....	.....	.....	.....	.....	.....	.....	.....	.40	.....	.....	.....	100
Bulwer, Cal	.....	.....	1.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Caledonia, Dak	....	.....	.....	.....	.....	.....	1.50	..	.....	.....	.....	.....	300
Choliar, Nev	....	.....	.....	.....	.....	.....	.....	..	5.25	.....	.....	.....	100
Chrysolite, Colo	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colorado Cent'l, Colo	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Cal. & Va., Nev	18.50	18.37	.....	.....	17.50	....	.....	.....	19.25	.....	.....	.....	260
Crown Point, Nev	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Deadwood, Dak	....	.....	.....	.....	2.95	.....	.....	.....	3.00	.....	3.00	2.90	600
Dunkin, Colo	....	.....	1.10	.....	1.15	.....	.....	.....	1.10	.....	.....	.....	900
Eureka Cons., Nev	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Father de Smet, Dak	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Freeland, Colo	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gold Stripe, Cal	.....	.....	.....	.....	.....	.....	.05	.....	.....	.....	.....	.....	300
Gould & Curry, Nev	.....	.....	.....	.....	.....	.....	.....	.....	5.13	.....	.....	.....	100
Green Mountain, Cal	.....	.....	.....	.....	.14	.....	.....	.....	.....	.....	.....	.....	100
Hale & Norcross, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Helena, Mont	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Holyoke, Idaho	.12	.11	.10	.....	.....	.....	.....	.....	.10	...	.09	....	1,300
Homestake, Dak	....	.....	13.00	.....	13.87	.....	.....	.....	.....	.....	14.00	13.87	335
Horn-Silver, Ut	.....	.....	.....	.....	.....	.....	.....	.....	.90	.81	.....	.....	500
Independence, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iron Hill, Dak	.....	.....	.....	.....	.....	.....	3.35	3.25	3.40	...	.....	.....	600
Iron Silver, Colo	.....	.....	.....	.....	.....	.....	3.00	.....	.....	.....	.....	.....	50
Leadville C., Colo	....	.....	.44	.42	.....	.....	.....	.....	.....	.....	.....	.....	700
Little Chief, Colo	.....	.....	.....	.....	.27	.25	.....	.....	.....	.....	.....	.....	700
Little Pittsburg, Colo	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Martin White, Nev	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mono, Cal	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Moulton, Mont	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Navajo, Nev	.....	.....	.....	.....	.....	.....	1.25	.....	.....	.....	.....	.....	300
North Belle Isle, Nev	...	.....	.....	.....	.....	.....	8.75	.....	.....	.....	.....	.....	100
Ontario, Ut	.....	.....	.....	.....	27.12	27.00	.....	.....	.....	.....	.....	.....	200
Ophir, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plymouth, Cal	.....	.....	.....	.....	20.25	.....	21.00	.....	.....	.....	.....	.....	150
Quicksilver Pref., Cal	.....	.....	25.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
" Com., Cal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Robinson Cons., Colo	.....	.....	.....	.....	.....	.....	.....	.....	.41	.....	.....	.....	210
Savage, Nev	8.12	.....	.....	.....	.....	.....	7.75	.....	.....	.....	.....	.....	100
Sierra Nevada, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver King, Ariz	.....	.....	.....	.....	.....	.....	5.50	.....	5.53	....	.....	.....	200
Standard, Cal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stormont, Ut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Surinam, D. G	3.40	3.35	3.55	3.35	.....	.....	3.50	3.45	.....	.....	3.50	3.45	2,200
Yellow Jacket, Nev	.....	.....	.....	.....	.....	.....	5.50	.....	.....	.....	.....	.....	100

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	Oct. 1. H.	Oct. 1. L.	Oct. 3. H.	Oct. 3. L.	Oct. 4. H.	Oct. 4. L.	Oct. 5. H.	Oct. 5. L.	Oct. 6. H.	Oct. 6. L.	Oct. 7. H.	Oct. 7. L.	Sales.
Alta, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Amador, Cal	1.55	1.50	1.50	.....	1.50	1.45	1.45	1.35	1.55	.....	1.40	1.35	2,460
Am. Flag, Colo	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Barcelona, Nev	.68	.66	.....	.....	.....	.....	.....	.....	.61	.....	.59	.56	2,000
Bechtel Con., Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Best & B'licher, Nev	6.87	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Big Pittsb'g, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Brunswick	1.60	.....	1.55	.....	1.60	.....	1.60	.....	1.60	....	1.60	.....	7,000
Bullion, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cashier	.59	.....	.60	.....	.65	.61	.60	...	.63	.59	.55	.....	9,100
Castle Creek, Id	.....	.....	.11	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,000
Central Ariz., Ariz	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Columbia & Beaver	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. Imperial	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Decatur, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Durango, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eastern Oregon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
El Cristo, U. S. Col	.....	.....	2.35	.....	2.35	2.30	2.40	2.25	2.50	2.30	2.50	2.35	3,350
Found Treasure	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hector	.90	.....	.88	.65	.....	.....	.....	.....	.....	.....	.....	.....	2,200
Julia, Nev	.60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Justice, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lacrosse, Colo	.12	.11	.....	.....	.12	.11	.10	....	.10	.....	.....	.....	4,400
Mexican, Nev	4.70	.....	.....	.....	.....	.....	.....	.....	5.00	.....	.....	.....	400
Middle Bar, Cal	.48	.....	.48	.....	.47	.46	.46	.44	.43	.40	.40	.40	8,300
Monitor	.20	.18	.18	.17	.19	.18	.19	.16	.17	....	.17	.15	12,600
New Pittsb'g, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Stand'd, Cal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Horn-Silv'r, Ut	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oneida Chief	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ori'nt'l&Mil'r, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.15	.12	.....
Phoenix of Arkan's	1.70	1.60	1.70	.....	1.70	....	.....	.....	1.65	.....	.....	.....	.....
Phoenix of Arizona	.....	....	1.00	....	1.00	....	1.15	.95	1.18	1.10	1.10	1.00	.....
Potosi	5.75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rappahann'k, Va	.18	.17	.....	.....	.18	..	.18	....	.....	.....	.18	....	.....
Red Elephant, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Renfrew, N. S	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Saint Kevin, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
San Sebastian	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Santiago, U. S. Col	.....	.....	3.35	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Security, Colo	1.20	1.00	1.00	.....	1.00	....	1.00	.....	1.00	....	1.00	...	2,050
Silver Cliff, Colo	.....	.....	.09	.....	.....	.....	.....	.....	.98	.....	.....	.....	2,000
Silver Leaf	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver Queen, Ariz	.....	.....	.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stanislaus, Cal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
State L'e, 1&4, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" Nos. 2 & 3, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sutro Tunnel, Nev	.36	.35	.37	.35	.36	.35	.36	.34	.36	.35	.37	.34	29,400
Taylor Plumas, Cal	.....	.....	.....	.....	.01	....	.02	....	.....	.....	.....	.....	2,300
Tioga	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tornado	1.10	.....	.....	.....	1.10	....	1.10	.....	1.10	.....	1.10	....	2,200
Union Cons., Nev	....	...	3.75	.....	....	.....	....	.....	.....	....	3.50	....	200

*Dealt in at the New York Stock Exchange. Unlisted Securities

BOSTON MINING STOCK QUOTATIONS.

Name of Company.	Sept. 30.		Oct. 1.		Oct. 3.		Oct. 4.		Oct. 5.		Oct. 6.		Sales.
Atlantic, Mich	.....	.....	.....	.....	.....	.....	8.87	.....	9.00	.....	.....	.....	150
Bodie, Cal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bonanza D	.....	.....	.....	.....	1.00	.....	1.00	.....	1.00	.....	1.00	.....	550
Boston & Mont., Mont	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Breece, Colo	.32	.....	.....	..	.33	...	.....	.....	.....	.....	.36	.....	1,000
Calumet & Hecla, Mich	.....	....	202	.....	200	.....	200	.....	200	. ..	200	.....	74
Catalpa, Colo	.26	.....	.26	.....	.25	.....	.26	.....	.26	.. ..	.....	.....	1,300
Central, Mich	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chrysolite, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Con. Virginia, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dunkin, Colo	1.20	1.05	1.20	.....	1.25	1.18	1.22	.....	.....	.....	.....	.....	1,045
Enterprise	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eureka, Nev	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Franklin, Mich	11.00	.....	.....	.....	.....	.....	10.50	10.00	10.75	10.00	.....	.....	125
Freeland, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Helena, Mont	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Honorine, Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ironton Iron Co., Mich	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Napa, Cal	1⅛	.....	1⅛	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Osceola, Mich	21.50	.....	.....	.....	23.50	.....	.....	.....	25.00	.....	.....	.....	70
Pewabic, Mich	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quincy, Mich	.....	.....	.....	.....	.....	.....	50.00	.....	.....	.....	50.00	.....	100
Robinson, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver King, Ariz	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard, Cal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stormont, Utah	.....	.....	.....	.....	.....	.....	.....	.....	.06	.....	.....	.....	300
Surinam, D. G	3.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100

Name of Company.	Sept. 30.		Oct. 1.		Oct. 3.		Oct. 4.		Oct. 5.		Oct. 6.		Sales.
Abington	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Allouez, Mich	...	..	.50	.....	.....	.....	.....	.....	.62	.....	.50	.....	600
Arnold, Mich	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Aztec	.....	.....	.08	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
Blue Ridge, Mich	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bijou	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bowman Silv'r, Nev	.04	.....	.04	.....	.04	.....	.03	.....	.03	.....	.04	.....	2,200
Brunswi'k	1.55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
Cashier, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Contentment	.....	.....	.07	.....	.....	.....	.....	.....	.....	.....	.06	.....	500
Con. Pacific, Cal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crescent, Colo	.10	.....	.09	.....	.....	.....	.....	.....	.10	.....	.11	.10	1,400
Cusi, N. Mex	.25	...	.24	.....	.26	.25	.26	.25	.27	.26	.26	.....	2,600
Decatur, Colo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
El Cristo	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.45	.....	100
Humboldt	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Huron, Mich	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mono, Cal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
National, Mich	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oriental & M., Nev	.18	.....	.16	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,000
Phœnix, Ariz	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rappahannock, Va	.18	.....	.17	.....	.17	.....	.17	.....	.....	.....	.....	.....	2,100
Security, Colo	.....	.....	1.00	.....	1.00	.....	.....	.....	1.00	.....	1.00	.....	550
Sutro Tunnel, Nev	.33	.....	.35	.....	.36	...	.36	.....	.....	.....	.35	.....	2,300
Tamarack	99.75	.....	.....	.....	.....	.....	.....	.....	99.00	.....	99.50	99.00	56
Taylor Plumas, Cal	.....	.....	.....	.....	.....	.....	.....	.....	.02	.....	.....	.....	1,000

New York: Dividend shares sold, 12,605. Non-dividend shares sold, 110,360. Total New York, 122,965.
Boston: Dividend shares sold, 5,414. Non-dividend shares sold, 14,900. Total Boston, 20,314.

COAL STOCKS.

Name of Company.	Par value of shares.	Oct. 1. H.	Oct. 1. L.	Oct. 3. H.	Oct. 3. L.	Oct. 4. H.	Oct. 4. L.	Oct. 5. H.	Oct. 5. L.	Oct. 6. H.	Oct. 6. L.	Oct. 7. H.	Oct. 7. L.	Sales.
Barclay Coal	..	.....	.. ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cameron Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.. ..	.....	28	.....	100
Ches. & O. RR	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
*Chic. & Ind. Coal RR	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col. & Hocking Coal	100	.....	.....	28¼	26	.....	.....	25	.....	.....	.....	.....	.....	225
Col., C. & I	100	36¾	36⅛	36¾	35½	37	35⅞	37	35¾	36½	36	35	34½	4,120
Consol. Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cumb. C. & I	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Del. & H. C	100	99⅞	99⅛	99¼	99	99¾	99	99	98½	99⅛	68⅝	99⅞	99⅛	3,122
D., L. & W. RR	50	130¼	129⅝	130⅛	128⅝	129¼	128⅛	128	125¾	127½	126½	127	125¼	110,890
Elk Lick Coal Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hocking Valley	100	21½	20⅞	21¾	21¼	22¼	20¾	21¾	21⅜	21⅞	21½	22½	22¼	3,780
Lehigh C. & N.†	50	47¾	47½	47½	47¼	47	.....	47½	.....	47½	47⅜	.....	.....	792
Lehigh Valley RR.†	50	56	.....	56	55⅞	55⅞	55½	55¼	55	55	54¾	.....	.....	570
L. & W. C. & I. Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Marshall Con. Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland Coal	100	.....	.....	.....	.....	11¼	.....	11¾	.....	.....	.....	.....	.....	250
Montauk Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morris & Essex	50	.....	.....	.....	.....	138½	.....	.....	.....	.....	.....	.....	.....	80
New Central Coal	100	.....	.....	11⅞	11½	.....	.....	12	.....	12	.....	11½	.....	510
N. J. C. RR	100	74¼	73¼	73¼	71½	72⅝	71¾	72	71	74	72½	73⅜	71⅝	17,050
N. Y. & S. Coal	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Y., Susq. & Western	100	9¼	.....	8⅞	.....	9¼	9	.....	.....	.....	.....	9½	.....	635
Do. pref	100	28¾	.. ..	28¼	.....	28¼	28	.....	. ..	.....	.....	28¼	.....	900
N. Y. & Perry C. & I	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Norfolk & Western R.R.	100	15½	.....	.....	.....	.....	.....	15	.....	.....	.....	.....	.....	400
Do. pref	100	42¼	42	42⅛	41	41⅝	40¾	41⅛	40	.....	... ..	41	40½	4,452
Penn. Coal	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. RR.†	50	56	55⅞	55¾	55⅛	55⅝	55⅝	55⅝	55⅝	55⅝	55⅝	.....	.....	2,474
Ph. & R. RR.**	50	61½	61⅛	61	59⅞	60⅜	59½	60⅛	59⅜	61⅞	59⅝	62	60½	504,066
Spring Mountain	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee C. & I. Co	100	27½	26¾	27⅝	26	27	25¼	26	.....	27	26	26¼	26	2,154
Westmoreland Coal†	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

** Of the sales of this stock, 72,186 were in Philadelphia, and 504,066 in New York.
† The quotations for these stocks are not percentage, but actual price.
* Dealt in at the New York Stock Exchange, Unlisted Securities.

Total sales, 656,510.

San Francisco Mining Stock Quotations.

Company.	Closing Quotations. Sept. 30.	Oct. 1.	Oct. 3.	Oct. 4.	Oct. 5.	Oct. 6.	Oct. *7.
Alpha	.....	.....	.....	.....	.....	.....	.....
Alta	2¼	2¼	2¼	2¼	2½	2⅝	.....
Argenta	.....	.....	.....	.....	.....	.....	.....
Bechtel	.....	.....	.....	.....	.....	.....	.....
Belcher	.....	.....	.....	.....	.....	.....	.....
Belle Isle	.....	.....	.....	.....	.....	.....	.....
Best & Bel	6½	6½	6½	5⅞	6⅞	6¼	.....
Bodie	1⅞	.....	.....	1¾	1¾	1¾	.....
Bulwer	.95	.90	.95	.90	.85	.95	.....
Challar	5⅜	5¼	4⅞	4⅝	5¼	5	.....
Con. C. & V.	17¾	19⅛	17½	16⅛	17⅝	17	.....
Con. Pac	.....	.....	.....	.....	.....	.....	.....
Crown Pt	6¾	7⅞	7	6⅜	7	6¾	.....
Eureka C	.....	7¼	.....	.....	.....	7¼	.....
Gould & C	4½	4⅞	4⅝	4¼	4⅝	4½	.....
Gd. Prize	.....	.....	.....	.....	.....	.....	.....
Hale & N	4¼	4¼	4⅛	4	4¼	4¼	.....
M. White	.....	.....	.....	.....	.....	.....	.....
Mexican	4⅜	4½	4¼	4	4⅜	4⅛	.....
Mono	1¼	.....	.....	1¼	1⅛	1¼	.....
Mt. Diablo	4	4	4	4	4	.....	.....
Navajo	1⅛	1⅛	1¼	1¼	1⅛	1⅛	.....
N. Belle I	.....	.....	.....	.....	.....	.....	.....
Ophir	7⅞	7¾	7½	7⅛	8⅛	7⅞	.....
Potosi	5½	5⅝	5¼	5	5⅝	5⅝	.....
Savage	7¾	8⅛	7½	7¼	7⅞	7¼	.....
Scorpion	.....	.....	.....	.....	.....	.....	.....
Sierra Nev	4¼	4¼	4¼	4	4⅜	4¼	.....
Sutro Tun	.....	.....	.....	.....	.....	.....	.....
Tip Top	.....	.....	.....	.....	.....	.....	.....
Union Con	3¼	3⅝	3⅜	3⅛	3⅛	3¼	.....
Utah	1¾	1¾	1¾	1⅝	1¾	1¾	.....
Yellow Jkt	5	5⅝	5	4⅞	5⅜	5⅜	.....

* No quotations.

declined from $8.12½@$7.75. Gould & Curry shows a sale at $5.13, Chollar one at $5.25, and Belcher at $6.13. Best & Belcher sold at $6.87½. Mexican advanced from $4.70 to $5. Potosi was quiet, at $5.75, and Union Consolidated at from $3.75@$3.50.

Among the Tuscaroras shares, Tornado was most active, selling at $1.10. About 1000 shares sold at from 75c. to 85c., and a few Navajo, at $1.25. North Belle Isle shows only one sale, at $8.75.

Phœnix of Arizona has been more active, and advanced from 95c. to $1.18 on Thursday, selling today at from $1 to $1.10.

But little attention is directed to Phœnix of Ark., which is selling at from $1.60@$1.70.

Rappahannock shows no life, and is quoted at 17@18c.

Meetings.

The annual and special meetings of the following companies will be held at the times mentioned :

Eureka Consolidated Mining Company, No. 306 Pine street, rooms 9-10, San Francisco, Cal., October 17th, at half past eleven o'clock, A.M.

Monongahela Bridge Company, Pittsburg, Pa., October 10th, from twelve to two o'clock, P.M.

Royal Gas Companies, of Philadelphia and Pittsburg, Philadelphia, Pa., October 12th, special meeting to consider the proposed consolidation with the Washington Natural Gas Company.

Western Land and Investment Company, No. 170 Broadway, New York City, October 18th, at twelve o'clock noon. Annual meeting and to consider propriety of increasing the capital of the company from $50,000 to $150,000.

Dividends.

Consolidated California & Virginia Mining Company, of Nevada, has declared a dividend, No. 11, of fifty cents per share, or $108,000, payable October 7th at San Francisco.

Delaware, Lackawanna & Western Railroad Company has declared a dividend of one and three quarter per cent, payable October 20th.

Dunkin Mining Company, of Colorado, has declared a dividend, No. 19, of five cents per share, or $10,000, and an extra dividend, No. 20, of the same amount, payable October 15th at Farmers' Loan and Trust Company, No. 22 William street, New York City.

Granite Mountain Mining Company, of Montana, has declared a dividend, No. 34, of fifty cents per share, or $200,000, payable October 10th at St. Louis.

Iron Silver Mining Company, of Colorado, has declared a dividend, No. 21, of twenty cents per share, or $100,000, payable October 28th at No. 23 Broad street, New York.

Original Mining Company, of Montana, has declared a dividend, No. 38, of five cents per share, or $3000, payable October 1st.

Tuna Oil Company, Pennsylvania, has declared a quarterly dividend of two dollars per share, $4400, payable October 3d at No. 67 Fourth avenue, Pittsburg, Pa.

Assessments.

Company.	No.	When levied.	D'l'nq't in office.	Day of sale.	Am'nt per share.
Alpha Cons., Nev.	22	Aug. 24	Oct. 4	Oct. 20	.50
Anchor, Utah	2	Sept. 20	Oct. 22	Nov. 12	.20
Andes, Nev.	32	Aug. 13	Sept. 20	Oct. 12	.25
Atlas, Dak.	....	July 22	Sept. 30	Nov. 15	.001
Bannock, Idaho.	...	Aug. 27	Sept. 27	Oct. 17	.50
Belcher, Nev.	33	Sept. 15	Oct. 20	Nov. 7	.50
Best & Belcher, Nev.	38	Aug. 25	Sept. 30	Oct. 25	.50
Bodie Con., Cal.	7	Aug. 12	Sept. 16	Oct. 21*	.50
Chollar, Nev	23	Aug. 22	Sept. 29	Oct. 18	.50
Como-Eureka, Nev.	2	Sept. 10	Oct. 18	Nov. 26	.06
Concord, N. C.	....	Sept. 16	Oct. 31	.....	.02
Cons. Imperial, Cal.	9	Sept. 6	Oct. 11	Nov. 8	.15
Cons. Pacific, Mo.	24	Sept. 6	Oct. 10	Oct. 27	.25
Imperial, Cal.	3	Aug. 11	Sept. 24	Oct. 21	.001-6
Justice, Nev	45	Sept. 2	Oct. 8	Oct. 27	.30
Locomotive, Ariz	2	Sept. 1	Oct. 5	Oct. 24	.50
Mayflower, Cal.	38	Sept. 27	Nov. 1	Nov. 22	.25
Mikado, Mich†	....	Sept. 13	Oct. 22	.....	.40
Mono, Cal	24	Sept. 15	Oct. 20	Nov. 21	.50
New Basil Cons., Cal.	12	Sept. 13	Oct. 18	Nov. 1	.02½
New Era, Dak.	3	Sept. 7	Oct. 11	Oct. 27	.00¼
North Bonanza, Nev.	7	Sept. 27	Oct. 31	Nov. 18	.15
Overman, Nev	58	Aug. 27	Sept. 30	Oct. 21	.25
Peerless, Ariz	10	Sept. 20	Oct. 27	Nov. 18	.25
†Pilgrim, Mich	....	Sept. 12	Oct. 22	.....	.15
Potosi, Nev	28	Aug. 22	Sept. 30	Oct. 20	.50
Pioche Cons., Nev.	3	Sept. 14	Oct. 20	Nov. 9*	.10
Rochester, Utah	....	Sept. 19	Oct. 20	Nov. 5	.05
San Luis, Cal.	11	Aug. 11	Sept. 23	Oct. 8	.48
Savage, Mo	69	Sept. 8	Oct. 11	Oct. 31	.50
Sierra, Nev., Nev.	89	Aug. 18	Sept. 21	Oct. 11	.25
Silver Reef, Dak.	3	Sept. 3	Oct. 5	Oct. 22	.00½
South Fork, Cal	50	Aug. 8	Sept. 8	Oct. 8	1.00
Spruce Gulch, Dak.	2	Sept. 14	Oct. 20	Nov. 10	.001
Sum. & Red Bird, Utah	3	Sept. 20	Oct. 15	Oct. 15	.25
Taylor Plumas, Cal.	2	Aug. 8	Sept. 7	.....	.05
Trojan, Nev	16	Aug. 22	Sept. 28	Oct. 19	.10
Utah, Nev.	2	Aug. 10	Sept. 12	Oct. 29	.25
Virginia Creek, Cal.	4	Sept. 27	Nov. 1	Nov. 30	.05
Weldon, Ariz	1	Sept. 20	Oct. 25	Nov. 15	.20

* The delinquent day and the day of sale were postponed to dates given above.

† Levied on assessable stock only.

Pipe Line Certificates.

Messrs. Watson & Gibson, brokers, 49 Broadway, report as follows for the week :

The oil market has been subordinated to speculation in oil. The producers are working to shut down new production, with fair hopes of success, but the market invites no outside interest, and it is doubtful whether it can be made to stay up, though it may get occasional spurts.

The following table gives the quotations and sales at the Consolidated Stock and Petroleum Exchange :

	Opening.	Highest.	Lowest.	Closing.	Sales.
Oct. 1.....	68¼c.	69c.	68¼c.	69c.	478,000
3.....	68⅝	69	67¼	67½	782,000
4.....	67½	67¾	67	67⅝	391,000
5.....	67⅜	69¼	67½	68½	1,159,000
6.....	68	68¾	67⅜	68	617,000
7.....	68⅜	69	68⅛	68½	839,000
Total sales in barrels.....					4,266,000

Boston Mining Stocks. Oct. 6.

[From our Special Correspondent.]

The market continues to rule dull without any special feature. In copper stocks, Calumet & Hecla sold same as last week at $200, and is in fair demand, with no pressure to sell. Quincy holds steady at $50. Although the production for September shows a large falling off from last year, Tamarack advanced from $98 to $99¾, with later sales at $99@$99½. The September product was over 500 tons, a gain of 289 tons over last year, and the outlook is very promising for a still larger production during the present month.

Franklin has been pressed for sale this week, resulting in a decline to $10, but later sales were at $10⅜, and the stock is in good demand at these prices. Osceola recovered from last week's depression, and advanced from $21 to $25 on small lots. Atlantic declined from $9½ to $8⅞, and recovered to $9 on last sale. The market, it will be seen, has been irregular, but there is so little doing, and no encouragement for speculation, that it can hardly be called a market, and the trading is confined to investment orders, and in small lots at that. With an easy money market, there would be more inducement to operate in this class of stock, but at present the public are not inclined that way.

In silver stocks operations have been confined to two or three specialities, with Dunkin as the principal feature. This stock has been quite active at both boards, and sold at $1.25 freely. A dividend of 10c. per share has been declared, payable the 15th inst., and we are credibly informed that after paying this dividend ($20,000) the company will have over $50,000 in the treasury for future dividends, while the outlook at the mine continues very promising. "Cusi," which is a Mexican mine, has been more active on its better prospects, with sales at 25@27½c. per share. This stock was orginally placed in the market by a large banking house in this city at $1.50 per share, and has sold as high as $3.25 or $3.50. The mine is in debt some $600,000 to $700,000, but recent discoveries leading to a better production will, it is thought, in time pay off the debt and make the stock of some value.

Sales of Bonanza were made previously at $1.

Baltimore Stock Quotations.

Company.	Bid.	Asked.
Atlantic Coal	$1.40@$1.45	$1.50
Baltimore & N. Carolina	....	.50@ .60
Conrad Hill	.05	.25
Diamond Tunnel	.40@ .42	.48
George's Creek Coal	85.00	95.00
North State, Balto	.60	.70
Ore Knob	.05	.10
Silver Valley	1.50@ 1.55	1.65@ 1.70

Highest and lowest prices bid and asked during the week ended October 6th.

Birmingham, Ala., Stock Quotations.

Company.	Bid.	Asked.
Alabama Connellsville C. & C.	....	100
Birmingham Min. & Mfg. Co.	155	160
Decatur Land, Imp. & Fur. Co.	26½@ 27½	27½@ 28
Decatur Mineral Land Co	29 @ 33	34½
Sloss Iron & Steel Co.	....	35 @ 36
* Sloss Iron & Steel Co	....	99 @ 91
Sheffield Coal & Iron Co.	....	79 @ 87½
Woodstock Steel & Iron Co.	50 @ 52	....

* Bonds.

Highest and lowest prices bid and asked during the week ended October 4th.

Deadwood-Dakota Mining Stocks.

Company :	H.	L.	Company :	H.	L.
Bullion	.05	.01½	Minna	.03	.01½
Centre Shot	.02	.02	Mutual	.14	.10
Enterprise	.03	.01	Rattler	.30	.25
Hester A	.10	.03½	Seabury Calkins	.20	.14
Iron Hill	3.25	3.00	Silver Ridge	.02	.02
			Spanish R.	.16	.16

Highest and lowest prices bid and asked during the week ended October 1st.

London Stock Quotations of American Mines.

Company.	Highest.	Lowest
Alturas Gold, Idaho	14s.	12s
Arizona Copper, Ariz	£⅜	£⅛
Birdseye Creek, Cal.	14s.	12s.
California Gold, Colo	9s.	8s.
Carlisle, N. Mex	£1¼	£1
Centennial, Cal.	£1	£¾
Charles Dickens, Idaho	8s.	7s.
Colorado United, Colo	£1⅛	£⅞
Denver Gold, Colo.	3s.	2s. 6d.
Eberhardt, Nev	7s.	6s.
Empire, Mont.	£3½	£3¼
Flagstaff, Utah	8s.	6s.
Garfield, Nev.	£1 5-16	£1 3-16
Gold Hill, N. C.	3s. 6d.	2s. 6d.
Hoover Hill	3s.	2s.
Kohinoor, Colo.	2s. 6d.	1s. 6d.
Montana Lt., Mont	£7¾	£7⅛
New Consolidated	3s.	2s.
New Emma Silver, Utah	6s. 6d.	5s. 6d.
New Hoover Hill, N. C.	3s.	2s.
New La Plata, Colo.	4s.	3s.
Plumas Eureka, Cal.	£⅝	£⅜
Richmond Con., Nev.	£5⅛	£4⅞
Ruby & Dunderberg, Nev	5s.	4s.
Russell Gold, N. C.	5s. 6d.	4s. 6d.
Sierra Buttes, Cal.	£1⅛	£⅞
Union Gold	15s.	10s.
U. S. Gold Placer, Colo.	£1	£⅞
Viola Lt., Idaho	£1 5-16	£1 3-16

Highest and lowest prices during the week ending September 24th.

Pittsburg Stock Quotations.

Company.	H.	L.	Closing.
Bridgewater Gas Co.	100.00	100.00	100.00
Chartiers Valley Gas Co.	86.50	80.00	80.00
Chartiers Block Coal Co	35.00	35.00	35.00
Consignee Mining Co.	.60	.60	.60
Hazelwood Oil Co	66.00	66.00	66.00
La Noria Mining Co	4.12½	3.87½	4.12½
Natural Gas Co. of West Va.	108.00	101.00	102.00
N. Y. & Cleve. Gas Coal Co.	45.00	41.50	45.00
Ohio Valley Gas Co.	48.00	41.50	45.00
Pennsylvania Gas Co.	30.00	30.00	30.00
Philadelphia Co.	49.00	48.75	49.00
Pleasant Valley.	48.00	48.00	48.00
Turner Oil Co	65.50	65.00	65.00
Westinghouse Air-Brake Co.	115.00	113.50	115.00
Westmoreland & Cambria Gas	50.00	50.00	50.00
Wheeling Natural Gas Co.	27.00	25.00	25.00
Yankee Girl Mining Co.	6.75	5.00	6.75

Highest and lowest prices bid and asked during the week ended October 5th.

SUTRO TUNNEL COMPANY.—IN ORDER that an exhaustive report about the company's property, income, prospects, and affairs by Theodore Sutro, Esq., attorney, etc., of the company, may be sent to the shareholders, they are requested to send their addresses at once to

HORACE H THAYER,
Assistant Secretary and Transfer-Agent,
Room 123, Produce Exchange, New York.

HASTINGS, JOHN B.,
Consulting Mining Engineer.
Offices: Hastings & Co., 80 Lombard st., London, E. C., England.
T. Seymour Scott, Esq., 72 Broadway, New York, U. S. A.
Present Address: Ketchum, Alturas County, Idaho, U. S. A. Cable address: Hastings, Ketchum, Idaho.
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